NATIONAL PETROLEUM NEWS

Table of Contents for January 1, 1919

Page

Leaders Of Industry View New Year Optimistically 11
Oil men whose opinions count heavily, while believing that refinery prices will sag for a time until readjustment of business from a war to a peace basis is well under way, view the coming year as one that will be a milestone in the prosperity of the industry in general.

Gasoline and Kerosene Consumption in States East of Rockies 14
Table based on figures compiled by the National Petroleum War Service Committee shows number of automobiles in proportion to population, average consumption of gasoline per automobile and per capita consumption of kerosene and gasoline in the states dealt with.

Production Engineering Department, Conducted by H. B. Goodrich..... 25
Semi-monthly article dealing with production problems discusses various methods for appraising oil properties.

Lubricating and Industrial Oil Engineering, by John Rome Battle 47
Mr. Battle in this department describes the machinery and lubricating requirements of woolen mills.

Review of Week's Developments in the Mid-Continent Field 19

Review of Operations in Other Fields by Special Correspondents 20-24

Market News, Prices Ruling On Refined Oils, Crude, Refiners' and Jobbers' Supplies 49-51

Financial News, Movement of Oil Stocks On New York Exchanges 53-54

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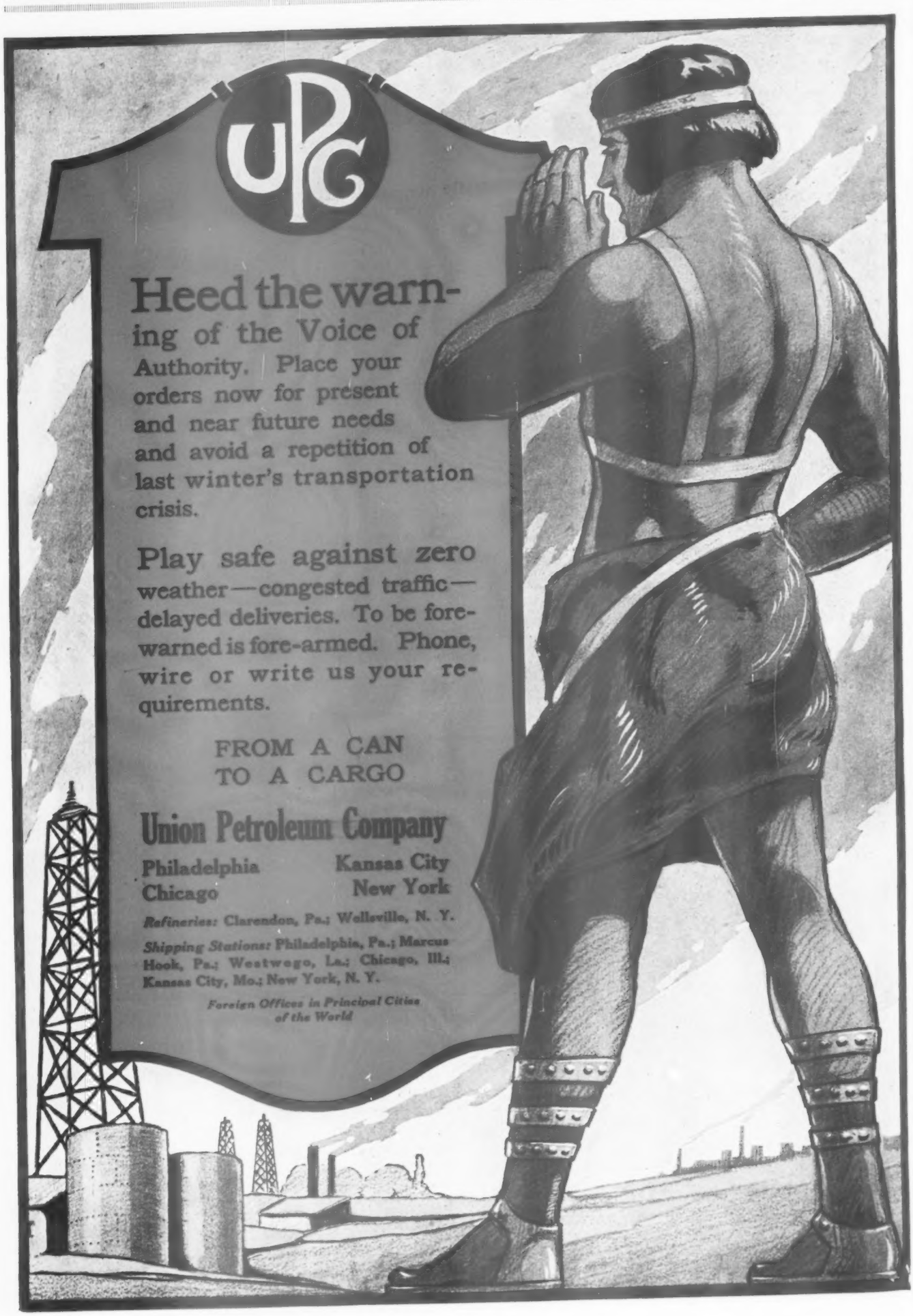
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1919 Will Be Prosperous For Oil Industry

LOOKING ahead past the immediate future the long heads in the oil industry agree that the trade is facing a period of prosperity which will likely make itself felt during the year upon which we are just entering.

Soft markets at the refinery and with the wholesale dealers in gasoline and fuel oil particularly, it is admitted, will continue during the period while this country and other nations as well are readjusting themselves and their industries to a peace basis. The length of the period the market will remain soft, it is generally stated, depends almost entirely on how quickly that readjustment is effected.

With the world entering upon what has been termed "an oil age," with the oil supplies of Europe and practically the whole world at low ebb and dependent upon this country for their replenishment; with a greatly stimulated use in this country of machinery dependent upon oil-consuming internal combustion engines for its source of power, there will come a demand for oil products that will directly benefit the oil industry of this country to a great extent.

A year ago the developed producing fields in this country were declining in their yield of crude oil, and there were many who looked pessimistically upon the immediate future as regards the nation's crude supply. This was particularly felt in the Mid-Continent field. The development of the new north Texas fields has wiped out that source for worry. There is an abundant supply of high grade crude there awaiting only transportation facilities to take it to the refineries.

A year ago railroad facilities for the oil trade were in a state of congestion that brought many districts of the country to the verge of an actual oil famine. There developed during the year a shortage of tin containers and barrels as well as tank cars. Skilled men from the industry were being drawn into the armies. The government was levying on the refiners for special oil products to supply the army and navy. These conditions and demands the industry met without complaint. But their removal need not detract from the spirit of thanksgiving with which the trade can look ahead into 1919.

Just a year ago it was being recognized that governmental regulation of the oil industry must come for the period of the war. There was considerable anxiety until the nature and method of that regulation was determined . That it was so fairly administered that the oil industry is now being talked of as the industry of this country which proved most efficient in meeting the war demands that fell upon it, is a rare compliment to Oil Director Requa, Chairman Bedford and the Petroleum Committee, and no less to the individual members of the industry without whose support and co-operation no such results could have been attained. But again the removal of those governmental restrictions the last few weeks is a source of rejoicing to the industry.

The editor has asked several men in the trade whose opinions count for a good deal to give NATIONAL PETROLEUM NEWS readers their ideas as to what the coming year holds for the industry, each discussing that particular phase of the industry with which he is most familiar. These statements are given on the following pages.

Should Be Year Of Profit For Jobbers

By G. I. Sweney, Peoria, Ill., President I. O. M. A., President Bartles-Sweney Oil Company

The outstanding conditions which it appears may be prevalent during the year 1919 in the oil industry, are a tendency toward lower prices and an increase in the supply of crude, in refining capacity and in manufactured products of the crude. The war has taught us many important lessons. It has shown what splendid results can be obtained by co-ordination. It has shown that competitors can protect their own interests, and at the same time protect the interests of the industry as a whole. It had developed improved methods and unbelievable economies. If these methods are continued and taken advantage of in the year to come, the results cannot be other than satisfactory.

The oil jobber is at his best when there is an adequate supply of gasoline, kerosene, etc. Prices are practically based on supply and demand, and a restricted supply of crude has usually meant high-priced crude and consequently high-priced products.

With the coming in of the fields of northern Texas and a prospect of ocean tonnage to handle Mexican oils, and with a greater Independent refining capacity than we have ever had before, every indication points to a greater supply of petroleum fuels than the country can absorb in its domestic market. Conditions abroad and the availability of bottoms for foreign shipment will, of course, materially govern domestic conditions, but on the whole, the situation is developing to what might be called a "jobbers' year" and, unless drastic cuts are made in the tank wagon markets, a reasonable profit should be in sight for every intelligently operated company. This is particularly true in some parts of the country, while it may be questionable as to the profits which will obtain in certain districts where practically no margins prevail at present.

Unfortunately, the petroleum industry has not been handled entirely on sound business lines, price conditions prevailing in different sections which have been unjustified and inexcusable, which could only be explained by an effort to eliminate Independent marketers in certain sections. I hope that thru closer co-operation of all interests, these plague spots may be cleaned up and the industry put on a legitimate footing for Independents and competitors of Independents alike.

The tank car situation and the transportation situation should be much improved during 1919. Under government control, higher railroad rates are in pros-

pect, but horizontal advances may be taken care of as heretofore, without serious inroads on the revenue of the oil jobber. The consumption of gasoline and lubricating oils, particularly for internal combustion motors, should show a large increase with the resumption of manufacture of automobiles and the more extended use of the mechanical transportation for hauling freight, traffic and passengers.

The farms of the middle west are rapidly supplanting the horse with the truck, which means a materially added consumption of kerosene or gasoline in the near future. Aeroplanes will be traveling regular routes, carrying mail, express and passengers, and millions of gallons of gasoline will be necessary for the operation of this service. The expansion of the business of the Independent companies may now be undertaken along reasonably conservative lines, because steel storage will soon be available and concrete storage is being developed for both light and heavy oils.

The Independent marketers are in better financial position, as a rule, than ever before and have learned how to invest their capital to good advantage and how to do business in a business-like way. While we must not expect that the companies competitive with the Independents are going to relax the energetic competition they have always maintained, I believe we may expect, in a broad and general way, more consideration of the fundamental business principles involved in the oil business than heretofore. We realize that these great interests have never been in position to openly advocate or assist in the passage of beneficial legislation, whereas the Independents have no past which prevents them from going into all legislative halls or our courts of justice. Therefore, reasonable working arrangements, thru some such organization as a Petroleum Institute now under consideration, might measurably benefit the whole industry and iron out many of the difficulties under which we have been laboring in the past.

Looks For Return To Normal In 3 Months

By J. E. Darby, Active Vice President, Mid-Continent Oil & Gas Association, Tulsa.

Due to war conditions, the year 1918 presented many new problems and many uncertainties to the oil industry. With peace imminent, time will be necessary to make the transposition from war to peace conditions. For some time the government has been purchasing and arranging transportation for petroleum products for itself and its allies. The government is now retiring from this position, leaving problems of transportation and financing to the former commercial agencies.

Considering this period of adjustment which has now commenced, together with the lessened demand for lighter products due to the winter season, it is only natural that prices of refined products should tend to sag. There appears to be no economic reason why normal conditions in the oil industry should not be substantially restored by next spring. With the return of worldwide industrial conditions to the normal, increased demand for refined products can be looked for.

In the Mid-Continent division, composed of Kansas, Oklahoma and north central Texas, the year just ended has shown a marked decline in Kansas production, amounting to some 30,000 barrels per day, due largely to the decrease in Butler county. This decrease, showing at the end of the active drilling season, is significant. Again, Oklahoma, with all the activity of the last year, shows a decline in total production.

To offset this, north central Texas is showing a considerable increase, due to the new production of Eastland county, with Comanche county promising a further increase. This oil, at present, however, is only to a small extent available for refining, due to the lack of transportation facilities. The Burkburnett pool is at present showing about 30,000 barrels a day, more than half of which is being transported in tank cars. Due to the fact that this pool covers the townsite of Burkburnett and that as a result there is intensive town lot drilling, the decrease in production, when it comes, no doubt will be rapid.

Texas Situation Uncertain

There are at present many uncertainties in the Texas situation. Adequate transportation facilities, which have been mentioned, is one. Another is the lasting quality of the producing horizon. The Bend formation, producing in the Ranger district, is so highly impregnated with lime as to leave some doubt as to the lasting qualities of the wells and the extent of the producing areas. Again, drilling is deep and will, undoubtedly, be slackened thru shortage of water for development. It is, therefore, questionable if Texas will produce sufficient oil during the coming year to materially disturb existing conditions.

Beginning in October, 1917, the stock of storage oil has been drawn upon. This reserve supply, which it is prudent to maintain, should be restored. With the resumption of normal commercial conditions, there seems to be no valid economic reason why the calendar year at hand should not be a profitable year for the entire industry.

Big Export Demand Waiting On Tonnage

By Edward Prizer, New York, President Vacuum Oil Company

I look for an active export demand for all grades of petroleum products for a number of months to come. Due to cessation of hostilities the war demands will naturally decline, but as an offset there will be a resumption of ordinary flow of products thru the usual commercial channels which have been largely shut off while the war was in progress.

In a number of foreign countries stocks have been depleted almost to point of exhaustion, not only because of shortage of supplies for export from this country, but because of inability to get shipping space. Release of tonnage for commercial purposes will enable movement to those countries where supplies are bare and for a time arriving stocks will be rapidly absorbed. The continuance of the demand thru any considerable period will depend upon the readjustment of usual industrial activities, as against mere war operations direct and indirect. Regarding this no one can prophesy—it will depend largely upon how quickly the European countries can secure political and industrial stability. At the present time, however, the oil industry has every reason to expect for some time to come an active export demand.

No Shortage In Oil Packages Or Tin Cans

By R. D. Benson, New York, President Tide Water Oil Company

Up to the date of the signing of the armistice it was thought that there would be a shortage of tin plate for the use of the oil trade both for export and domestic trade. The Conservation Division of the War Industries Board had stated to the National Petroleum War Service Committee that the tin plate used by the oil trade would have to be reduced to 70 per cent at the most, of the normal requirements of the trade.

A committee had been appointed, consisting of representatives of companies using the larger amounts of plate, and this committee had had several conferences with the Conservation Division and had finally secured an apportionment of about two million base boxes of tin and allotted it as equitably as possible among the various companies. This had been accomplished only a few days before the signing of the armistice. Very shortly after this, however, the Tin Plate Committee was notified that all restrictions had been removed, and since then the mills have been rolling large quantities of tin plate and shipping to their customers to fill the balance of old contract orders. It therefore seems that the oil trade will have no difficulty in securing all the tin plate they may require.

The outlook for foreign business is very bright. As soon as freight room can be had there will undoubtedly be very heavy shipments to the Orient and South America. During the period of the war, and in fact ever since freight room became scarce, a large part of the trade in the Orient has been supplied by bulk shipments from California, but these would not have taken care of the consumption if it had not been for the great stocks carried by some of the oil companies at the beginning of the war. It is believed that shipments will again be made from the Atlantic coast, that, with ordinary rates of ocean freight, bulk shipments from the Pacific coast cannot compete with case shipments from the Atlantic coast because of the money made by carrying return cargoes to the Atlantic coast from foreign ports.

The amount of tin plate required for domestic use is small as compared with export requirements, and this trade has not been curtailed to any extent by war conditions.

The use of steel barrels during the war was curtailed by reason of the high cost of steel. If the war had continued another year, it is probable that the Conservation Division of the War Industries Board would have put in force regulations restricting its use, but this had not been promulgated up to the time hostilities ceased.

The price of this class of steel packages and drums will naturally fall with the decline in the price of steel and

labor, but refiners should have no difficulty in obtaining what they need now if they are willing to pay present costs. The price of wood packages will probably remain high during the winter, for, owing to the great shortage of labor prevailing in the districts where staves are made, a smaller output than usual has been cut. The price of staves and hoop iron, however, will probably decline by spring or summer of 1919, thus making for cheaper wooden packages.

Growing Demand For Oil On Pacific Coast

By L. P. St. Clair, Los Angeles, President Independent Oil Producers' Agency of California

In my opinion, the future of oil—locally, nationally and internationally—is very bright. The war has demonstrated its great value as nothing else could have done. Hereafter, it will be eagerly sought after, both as fuel and for its many refined products. As fuel oil, its greatest world future will be on the ocean. Here it can not be approached by any other fuel. New ships will all be built to use it, either under boilers or with internal combustion engines. Coal cannot compete, its use will be limited to ships too old to justify transformation and to those in purely local service in regions where coal may be produced at exceedingly low cost. On land, coal will be used wherever it can be produced at a cost too low for oil to compete.

In land transportation, the automobile passenger car and freight truck will have a future, only the beginning of which is now in sight. Railroads will have to use much coal as fuel in large areas where oil is too costly to burn, but the motor truck will supplement rail service in many lines and will displace it in others, and the motor car and truck is dependent entirely upon fuel produced from oil.

Air service, commercial as well as military, is just beginning. It will be wholly dependent upon oil for fuel. Aviation naphtha will be in great world demand.

California oil as a fuel has in store a great future on the Pacific Ocean, and, in the course of a reasonable time, there should be a great extension of such commerce. In California, and in immediately tributary regions, where coal is not produced, oil fuel will be in growing and permanent demand. It is here, right at home, that oil fuel has always commanded the best price proportionally to the cost of delivery because of the absence of competition. We should, therefore, prefer to sell it here whenever possible to do so. Only the existence in former years of a great surplus caused California oil to enter the coal regions as fuel.

I do not look for any marked revival of the fuel oil trade in Washington, Oregon and British Columbia, for the reason that there they have cheap coal right at hand, and there will be no more cheap fuel oil. Neither do I think there will be any marked increase in the Arizona fuel oil trade. The copper mines and smelters are the chief consumers in that region and the close of the war does not seem to forecast any big increase of their business—at least, not immediately. Moreover, they can get coal from New Mexico at reasonable prices. There is little demand for oil on the west coast of Mexico, and the South American trade is being taken care of by Mexican oil which is now more available than that of California.

With the return of our tank ships to the Pacific and the construction of new tonnage, the old markets in China and Japan for refined oil products from California oil should be revived and extended. The fact that in Japan the wonderful demand has forced the price of native crude oil up to $8 and $9 a barrel should be highly encouraging to marketers here.

The greatly increased home consumption of California lubricating oils is another highly encouraging development, as is, also, the increased demand for these products in the east, the middle west and even abroad. Their special adaptability for certain lines, in which they are superior to their competitors, and their fitness for any line of work have become known and appreciated, so that their future is now assured.

Upbuilding of the Pacific coast insures a vast market for all our refined products.

Of course, there may be some temporary lull in demand, but we need not worry about it, for there may be expected a quick revival. The future of oil is fully assured.

Eastern Refiners Turn To Kentucky For Oil

By Special Correspondent

PITTSBURGH, Dec. 30. — With the removal of the restrictions imposed by the Government on crude prices and the regulations governing the payment of premiums, the eastern refiners have made an agreement among themselves to keep in force as far as they themselves are concerned, the provisions of the crude stabilizing plan, at least until March 1st.

This is because the allotment of crude that was made by the South Penn Oil Company, the principal producer in the eastern fields and its subsidiaries, to the Independent refiners in 1903 and 1904 cannot be further increased from the 200,000 barrels a month originally allocated.

This is because of the constantly decreasing production of the fields and of the fact that the Vacuum Oil Company, the Atlantic Refining Company and the Parkersburg, W. Va., refinery of the Standard Oil Company of New Jersey are making constantly increasing inroads on the available supply of crude.

Realizing that the possible supply of crude was a fixed, or rather diminishing quantity, and that whatever oil one or another of the refiners was able to add to his allotment thru bidding up the price, must come out of the share of some other refiner whose output would be curtailed by just that much, the refiners decided to get together.

As a result of meetings of the refiners, the Warren and Clarendon, Pa., refiners, at the latter city, December 19th, and of the Oil City refiners, December 20th, it was decided to turn to Kentucky for crude to supplement the failing supply from the Pennsylvania, West Virginia and Ohio fields.

The new producing fields in Lee and Estill counties, Kentucky, are yielding about 16,000 barrels of crude a day, of which only about 40 per cent is being taken by the Cumberland pipeline. This leaves in the neighborhood of 10,000 barrels a day which might be absorbed by the Pennsylvania refiners.

It is the plan to put in gathering lines to collect the crude from the various leases at central loading points and transport it to the refineries in tank cars. Most of the refiners have sufficient fleets of tank cars to take care of this transportation in addition to marketing their products with their present equipment. The Kentucky crude is such that it is suitable to run in refineries formerly running on Pennsylvania and West Virginia oil.

The Pittsburgh and Coraopolis refiners are expected to hold a meeting here soon to agree to the plan of continuing the crude stabilizing system.

132 Quarter Sections Up At Next Osage Auction

TULSA, Dec. 29.—The sixth public auction of restricted Osage lands, announced for March 5th, next, will result in an offering of 132 quarter-sections, the bulk of which acreage is on the east side of range 7. Twenty-seven tracts will be offered west of the east line of range 7, which part of the Osage had not been opened up prior to the sale of November 9th, last, when a number of tracts were sold. There will be offered at the next sale 105 tracts on the east side.

Tracts to be offered on the west side will include acreage in ranges 6 and 7; townships 24, 25, 26 and 29. These offerings are scattered from a point southwest of Pawhuska north thru the Foraker quadrangle almost to the Kansas line, which latter dividing point cuts thru the north half of township 29. Territory due west of the Gypsy Oil Company et al well in Sect. 17-27-8 (east side), is not included in the offering. This well was the 7,000 barrel producer brought in by the American Pipeline Company, the gas lessee, and sold at the November 9th sale for $600,000.

Offerings on the "east side," however, are dotted over the entire area from north to south and as far east as the county line, where the old Bartlesville district is skirted. These offerings are in ranges 8, 9, 10, 11 and 12; townships 21 to 29, and include some acreage not far distant from the Sect. 17 well, northwest of Pawhuska 12 miles, which is that far from production on other leases.

TULSA, Dec. 27. — After delays that resulted from weather and labor conditions that had not been counted upon, the Prairie Pipe Line Company's 274 mile pipe line from the Ranger, Texas, district to North Drumright, Okla., requires only the testing operation before it can begin running oil.

This will give an outlet for central west Texas production in cases where wells were drilled to the top of the pay and closed down for lack of facilities. The latest announcement is that line should be running oil immediately after the first of the year.

Kerosene Demand Varies Little Over U.S.

DESPITE the huge demand for gasoline, fuel oil and other products, kerosene remains the most uniformly used staple of all petroleum products.

This is shown by the table below, showing per capita consumption by states of kerosene and gasoline in the states east of the Rocky Mountains for 1918. The table was worked out by THE NATIONAL PETROLEUM NEWS from statistics prepared by the National Petroleum War Service Committee and is probably the first tabulation of per capita consumption ever attempted for so large a number of states.

The per capita consumption of gasoline in the various states varies enormously, jumping from 5 gallons in Mississippi, the lowest state, where there is one auto for every 84 persons, to 51.4 gallons in Nebraska, where there is one automobile for every 7 persons, to say nothing of the numerous tractors used by the farmers, and touching all the figures between these extremes.

The per capita consumption of kerosene, on the other hand, varies not more than three gallons, the range being from 11.8 gallons in Oklahoma, the lowest state, to 14.8 gallons in Indiana, the highest state. The low per capita consumption in Oklahoma, the great refining state, is due to the abundance of natural gas and its common use for heating and lighting.

Consumption of gasoline in the states dealt with was practically twice as much as that of kerosene, being 1,297,391,172 gallons in the case of kerosene to a total of 2,321,641,224 gallons of gasoline. Using the figures of the 1914 estimate of population of the United States census bureau, in round numbers 90,000,000, gives a per capita consumption for the year in the states east of the Rockies of a little over twenty-five gallons of gasoline and a little less than fourteen gallons of kerosene.

According to the figures of the War Service Committee there were in 1918 in the states east of the Rocky Mountains, 4,515,918 automobiles in service. Of these, 280,445 were commercial vehicles and 4,234,473 passenger cars.

The figures worked out by the committee show an average gasoline consumption of 2,100 gallons per truck per year and an average consumption per passenger car per year of 304.5 gallons. The smallest number of automobiles in proportion to the population was found to be in Mississippi, where there is one auto for every eighty-four persons and the largest in Nebraska, where there is one machine for every seven persons.

The total of gasoline used for purposes other than motor fuel in the states for which statistics were given was 443,890,722 gallons.

Total consumption of Gasoline and Kerosene, by states, for 1918. Consumption per capita by states from statistics prepared by the National Petroleum War Service Committee. Only the states east of the Rocky Mountains are considered.

Number passenger automobiles in use in United States January 1st, 1918, 4,234,473.
Number motor trucks in use in United States January 1st, 1918, 280,445.
Total estimated gasoline consumption by motor vehicles for 1918, 2,321,641,224 gallons.
Average consumption per truck per year, 2,100 gallons. Average consumption per passenger car, 304.5 gallons.

				1918 Gasoline Gallons			1918 Kerosene Gallons	
State	Population (1914 Est.)	Total Number Autos	Number Persons To Auto	Total Consumption	Other than Motor Fuel	Consumed Per Capita	Total Consumption	Consumed Per Capita
Alabama	2,262,112	32,679	71	22,603,938	4,315,962	9.9	31,786,146	14.1
Arkansas	1,693,135	28,807	51	11,925,900	2,273,082	7.1	23,353,050	13.0
Colorado	902,971	64,458	14	29,160,516	5,567,856	32.3	11,806,284	13.1
Connecticut	1,197,464	74,258	16	54,152,658	10,339,812	45.2	16,476,978	13.8
Delaware	209,817	12,532	15	5,650,890	1,078,980	26.9	2,984,058	14.2
Dist. Columbia	363,980	27,981	13	15,311,226	2,923,494	42.1	4,930,128	13.5
Florida	848,111	25,000	34	11,031,300	2,106,300	13.0	11,157,552	13.2
Georgia	2,776,513	67,294	41	31,043,670	5,927,418	11.2	38,661,042	13.9
Idaho	391,260	24,538	16	10,185,000	1,944,726	26.0	4,800,390	12.2
Illinois	5,966,098	337,476	18	160,301,694	30,607,752	26.5	83,681,850	14.0
Indiana	2,774,798	190,126	14	85,279,950	16,283,232	30.7	40,089,378	14.4
Iowa	2,221,000	270,964	8	113,351,910	21,643,230	51	32,953,788	14.8
Kansas	1,769,059	161,708	11	64,695,582	12,352,872	36.5	25,039,686	14.2
Kentucky	2,357,958	46,908	50	23,018,436	4,395,090	9.7	33,991,734	14.4
Louisiana	1,773,482	27,276	65	14,673,678	2,801,652	8.3	24,520,776	13.8
Maine	762,787	39,245	19	20,762,280	3,964,296	27.2	11,027,856	14.4
Maryland	1,338,358	50,689	50	26,400,906	5,040,966	19.7	19,201,434	14.1
Massachussetts	3,600,787	163,620	27	119,648,928	22,845,606	33.2	49,949,592	13.8
Michigan	2,995,736	235,002	12	106,199,730	20,277,600	35.4	41,646,276	13.9
Minnesota	2,200,000	160,555	13	73,742,214	14,080,248	33.5	30,748,158	13.9
Mississippi	1,895,658	22,371	84	9,529,212	1,819,482	5.0	26,596,584	14.0
Missouri	3,372,886	149,749	22	71,699,670	13,690,236	21.2	46,891,908	13.9
Montana	431,494	43,380	9	18,128,586	3,461,430	42.0	5,578,776	12.9
Nebraska	1,244,810	159,779	7	64,045,044	12,228,720	51.4	17,644,536	14.2
New Hampshire	438,021	21,623	20	11,837,532	2,260,230	27.0	6,357,256	14.5
New Jersey	2,804,634	117,761	24	85,536,444	16,332,204	30.4	37,624,398	13.4
New Mexico	382,437	14,064	27	6,021,078	1,149,666	15.7	4,800,390	12.5
New York	9,853,059	402,454	24	262,430,280	50,108,058	26.6	135,317,910	13.7
North Carolina	2,336,815	46,280	50	20,017,914	3,822,210	8.6	32,694,270	13.9
North Dakota	700,024	62,315	12	27,568,002	5,263,776	39.4	8,562,792	12.2
Ohio	5,019,182	346,123	14	230,133,246	43,941,282	45.8	70,707,798	14.1
Oklahoma	2,070,420	92,329	22	41,406,834	7,906,164	19.9	24,520,692	11.8
Pennsylvania	8,234,000	331,661	24	164,770,872	31,460,108	20.0	113,651,454	13.8
Rhode Island	591,000	27,009	22	15,343,502	3,120,600	25.9	8,043,882	13.6
South Carolina	1,590,015	33,463	47	15,256,920	2,913,120	9.6	22,444,884	14.1
South Dakota	670,814	64,847	10	25,755,240	4,917,654	38.4	8,692,530	12.9
Tennessee	2,254,754	44,300	50	22,480,794	4,293,240	9.9	32,305,056	14.3
Texas	4,229,235	194,458	21	88,721,262	16,940,322	20.9	57,733,956	13.7
Utah	413,702	19,365	21	13,610,856	2,598,834	32.9	5,578,818	13.5
Vermont	361,828	21,652	12	9,587,046	1,830,528	26.5	5,319,342	14.7
Virginia	2,144,757	54,606	39	24,097,962	4,601,226	11.2	30,618,462	14.2
West Virginia	1,346,192	30,000	44	13,510,098	2,579,598	10.0	18,163,530	13.5
Wisconsin	2,460,000	164,114	15	74,935,224	14,308,014	30.5	34,640,382	14.0
Wyoming	167,383	12,351	13	5,094,474	972,720	30.4	2,205,588	13.1

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Morris & Company
Thomas E. Wilson
General Manager.

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GMC TRUCKS

Huns Could Not Find Gasoline Substitute

By Special Correspondent.

WASHINGTON, Dec. 31.—Answers to the question as to how Germany so long continued the war after her supplies of petroleum products are supposed to have become exhausted may be made in a short time. Samples of the fuel found in the tanks of trucks surrendered to the Allies ought to be received here soon. Ten thousand were surrendered, and even if some of their tanks were dry, there must have been some fuel in some of them, so it can be determined what sort of fuel they were operating on.

Early in the war there was a suspicion that the German chemists had found something that was enabling their army to keep going on self-propelled vehicles much longer than was thought possible. There was a belief that there might be a mixture of alcohol, made in the 6,000 distilleries in that country, benzol and the heavier products of petroleum brought in from the Galician fields.

Not a drop of any fuel other than plain gasoline, some of it better than others, has been found in any tank of any kind of a German vehicle so far as is known. Only a few captures of vehicles, other than airplanes, were made before the signing of the armistice. Many airplanes were taken, however, and in the tank of very one the only thing found was plain gasoline.

That fact is submitted for the consideration of those who are working on plans for making combination of gasoline, benzol and other constituents for use as motor fuel in this country. The Germans were supposed to have been hard put to it for liquid fuel. They have some good chemists, altho much of the supposed superiority in chemistry is pure bunk. But the combination of a scarcity of gasoline and the presence of good chemists, together with a supply of benzol, should have resulted in the production of a synthetic fuel of near the efficiency of straight gasoline. There is, however, not a bit of evidence tending to show that the supposedly efficient chemists achieved anything. In fact there is no evidence that they tried to produce anything that would have the effect of piecing out the small supply of gasoline.

That there was not a plentiful supply of fuel for the airplanes may be inferred, from the fact that German aviators were not allowed to use their machines for combat purposes. They were permitted to use them only for scouting or bombing purposes, not for seeking engagements with the flying men of the Allies.

Yet the super-chemists from east of the Rhine were not able to figure out a combination of combustible things to use as a substitute for gasoline, which was undoubtedly so short as to be a menace to the German army long before its collapse.

In pointing out the fact that Alsace-Lorraine produced prior to the war forty-two per cent of the total amount of 120,000 tons of crude oil produced in Germany, a current United States Commerce report shows the economic loss to Germany involved in the cession of this territory.

While the yield has increased somewhat lately, it is still of slight importance as compared with the total German consumption of petroleum.

Pelaez Rule Of Mex. Oil Fields Ended?

By Special Correspondent.

EL PASO, TEXAS, Dec. 30.—Advices reaching the border from the interior of Mexico are to the effect that Manuel Pelaez, who has rule d the oil country on the east coast for so long, has retreated from that section with little or no resistance. Pelaez is said to have a very small following. Operations of Pelaez have ranged south from the Tampico and Tuxpam districts into the state of Vera Cruz, and he is generally considered responsible for conditions existing on the Tampico and Tuxpam districts for the last year or eighteen months.

Felix Diaz, who is reported now to be forming a counter revolution against the Carranza government that would embrace all factions hostile to the adminstration, is operating farther south along the railroad between Vera Cruz and Mexico City.

An estimate of petroleum resources of Mexico, compiled by the Mexican secretary of commerce, industry and labor, has been made up in the form of a compilation of statistics. This compilation says that there are more than 607,000 square kilometers of oil lands in Mexico, less than four per cent of which have been explored. It is estimated that there are 341,000 square kilometers in the region of the Gulf of Mexico and the peninsula of Yucatan; 191,000 square kilometers in the region of the Pacific Coast and 75,000 square kilometers in the region of Lower California. A total of 14,373 square kilometers has been explored, the report says, and testing has begun of 8,507 square kilometers more.

Quits Gulf Organization To Join Sinclair Forces

TULSA, Dec. 27.—John V. McMahon, formerly second vice-president of the Gypsy Oil Company in charge of operations at Tulsa, who last summer was transferred to New York in an executive position with the Gulf Oil Corporation interests, has joined the forces of the Sinclair Oil Corporation. Beginning January 1st, Mr. McMahon will be in charge of central west Texas operations of the Sinclair interests, holding an executive position.

Mr. McMahon's rise with the Gulf interests was rapid, he having taken charge of their Mid-Continent operations when the first vice-president, Murray M. Doan, went to Pittsburgh about two years ago. Last June it was decided to send Mr. McMahon to New York and Henry McGraw succeeded to a similar position to that he had held at Tulsa, a slight readjustment of positions resulting, Mr. Doan also spending a part of his time in the Mid-Continent again.

The acquisition of Mr. McMahon by the Sinclair interests marks a second time that this organization has drawn upon the Gypsy for executives. About four years ago, C. E. Crawley, a vice-president of the Sinclair interests at Tulsa, was obtained from the Gypsy at a time when he was an assistant to Mr. Doan in the executive offices.

Sees Big Production In Deeper Oklahoma Sands

Staff Secial.

TULSA, Dec. 27.—That the oil acreage of the undeveloped Osage country is equal to the entire area drilled in the state of Oklahoma at the present time was pointed out by Alf G. Heggem, president of the Oil Well Improvements Company, in a talk at the regular weekly luncheon of the Tulsa Ad Club. Mr. Heggem, who formerly was an engineer and technologist with the U. S. Geological survey, predicted that as much oil may be produced in this prospective area as has been taken from underground in Oklahoma in the last fourteen years.

Mr. Heggem pointed out that the Bartlesville sand should be found in the Garber and Billings fields of the northwestern part of the state at a depth of 5,000 or 6,000 feet, where, he said, it should be productive. Deeper pay horizons encountered in fields around Tulsa, where the Wilcox, Devonian and Silurian formations have been found productive, he said should provide oil activity for years in the future. He also pointed out that the area between the Osage Nation and Garber-Billings production is a wide territory promising for development.

"Of one thing I am firmly convinced," said Mr. Heggem, "and that is that there will be more oil produced in the Mid-Continent field in the future than has been produced in the past; and he who predicts any early decline in the production around Tulsa is not basing his prediction upon the facts in the case."

Mr. Heggem also touched upon manufacturing and referred to the refinery interests of Tulsa, which, he pointed out, will continue to grow not only as a result of development within the state but because of the crude made available to the plants thru pipeline building into the Texas fields.

Col. Lyons Returns To Conewango Company

WARREN, PA., Dec. 30.—The reelection of Col. U. G. Lyons as president of the Conewango Refining Company marks his return to that company after about a year's absence in the service of the government as head of the Oil Branch of the Fuel and Forage Division of the U. S. Quartermaster's Corps, with offices at 51 Chambers St., New York.

Col. Lyons resigned from the company about a year ago to enter the services of the government. He had been at its head since its organization 16 years ago. He was commissioned a lieutenant colonel in the Oil Branch, Fuel and Forage Division, last July. In this capacity he had a force of 90 officers and men under him for detail work. It was his duty to make purchases of all oil supplies for use by the United States army in this country or abroad.

While Col. Lyons was in government service, W. E. Wall, head of the Fred G. Clark Company, Cleveland, held the presidency and actively managed the affairs of the Conewango company.

Ranger's Old Production Dropping Off

Staff Special,
RANGER, TEX., Dec. 27.

ANALYSIS of the production of the wells in Eastland county in the thirteen and a half months since the original McCleskey producer was drilled in the Ranger district by the Texas & Pacific Coal & Oil Company, shows that the 61 now yielding crude are capable of producing 27,400 barrels daily as against their worth when first completed of 45,100 barrels daily.

The accompanying table, giving the initial production, present output and the sand record of all the wells completed in the thirteen and a half months period is particularly significant as indicating what may be expected from this part of the central west Texas field, when it is considered that prior to six months ago there had been drilled in Eastland county only twelve producing wells. These had initial production of 6,920 barrels as against present output of 2,825 barrels. The remainder of the decline in production, therefore, measures against completions in the last five months and a half of the present year, the table taking into consideration a part of the December, 1918, completions.

Notable among the December completions not included in the table is that of the Prairie Oil & Gas Company on the Emma Terrell tract, northwest of the same company's Slayden, which at 3,463 feet, or three feet into the pay formation, was making between 6,000 and 7,000 barrels daily, the largest well to be completed in the history of the field.

Not Producing to Capacity.

A number of wells in the Ranger district, it may be pointed out, are not producing to capacity, and have not been finally completed. In this classification are Frank Cullinan and the Humble Oil & Refining Company's No. 2 J. W. Jones; the Prairie Oil & Gas Company's No. 1; T. J. Earnest, its No. 1 W. Howard, No. 1 Keaghey, No. 1 Texas & Pacific Coal Company fee, No. 1 J. R. Wood, No. 1 J. E. Butler and No. 1 N. S. Whitson.

Wells shut down on top of the sand because of no pipe line facilities for handling the production are as follows:

Texas & Pacific Coal & Oil Co.'s.

	Feet
Brewer, F., 3	3,275
Meyers, M. M., 1	3,193
McCleskey, D., 1	3,390
McCleskey, J. H., 2	3,295
McCleskey, J. M., 1	3,160
McCleskey, J. H., 1	3,395
Rice, W., 1	3,443

Prairie Oil & Gas Co.'s.

	Feet
Brewer, M. V., 1	3,130
Christmas, W. S., 1	3,265
Meyers, W. M., 1	3,162
Roper, E., 1	3,243
Slayden, 2	3,245
Slayden, 3	3,260
Terry, J. W., 1	3,235
Terry, J. W., 2	3,240

Definitely abandoned dry holes in Eastland county number thirteen, as follows:

Atlas Oil Co., Mann, 1, sand at 3,070-3,080 feet, 3-barrel showing after 40 quart shot.

Crosbie & Davis, Crosbie, J. E., 1, sand at 3,600 feet (producing from 1,300 foot sand).

Humble O. & R. Co., Smith, 1, sand at 3,445 feet.

Magnolia Petroleum Co., Webb heirs, B. H., 1, sand at 3,670 feet, salt water at 3,663 feet.

Mid-Kansas Oil Co., Rush, J. M., 1, sand at 3,945 feet, showing of oil at 3,253 feet.

Prairie Oil & Gas Co., Falls, J. T., sand at 4,070 feet.

Prairie Oil & Gas Co., Phillips, Jack, 1, sand at 3,210 feet, salt water at 4,200 feet.

Seamans' Oil Co., Havemeyer & Seamans, sand at 3,525 feet, hole full of water at 3,510 feet.

System Oil Co., Underwood, E. R., sand at 3,575 feet.

Texas & Pacific, Berry S. A., sand at 3,435 feet.

Texas & Pacific, Davenport, J. S., 1, sand at 3,710 feet.

Texas & Pacific, McDowell, Eva, 1, sand at 3,510 feet (1,720-1,775 feet water and sand).

Texas & Pacific, Pitcock, W. T., 1, sand at 4,020 feet, 3,340-3,350 feet showing of oil and gas.

Oil Wells In Eastland County, Texas, Initial Output And Present Status

Company	Farm and Well	Completion	Init'l Prod. Bbls.	Pres't Prod. Bbls.	Depth Feet	Sand Record Feet
Texas & Pacific	J. H. McCleskey 1,	Oct. 1917,	1200	320	3425	3415–3426
Texas & Pacific	B. P. Davenport 1,	March 1918,	800	400	3429	3419–3429
Texas & Pacific	O. P. England 1,	May 1918,	400	40	3405	3383–3405
Texas & Pacific	L. Williams 1,	May 1918,	100	5	3421	3355–3390
Texas & Pacific	N. Walker 1,	May 1918,	510	430	3407	3392–3407
Cunningham et al	D. C. Pratt 1,	June 1918,	30	12	3214	3194–3214
Texas & Pacific	Floyd Brewer 1,	June 1918,	2000	1280	3308	3290–3308
Texas & Pacific	T. Duncan 1,	June 1918,	1000	270	3396	3377–3393
Texas & Pacific	W. M. Meyers 1,	June 1918,	10	3	3410	3390–3408
Texas & Pacific	J. M. Rust 1,	June 1918,	650	60	3467	3444–3460
Texas & Pacific	J. W. Shook 1,	June 1918,	150	10	3403	3364–3403
Texas & Pacific	R. C. Stuart 1,	June 1918,	60	5	3405	3391–3405
Texas & Pacific	M. H. Hagaman 1,	July 1918,	65	10	3491	3245–3277
Prairie O. & G.	Slayden 1,	July 1918,	3800	1800	3445	3440–3445
Plains O. & G.	Barnett 1,	July 1918,	200	15	3195	3160–3190
Cullinan & Humble O. & Rfg. Co.,	J. W. Jones 1,	July 1918,	4000	500	3493	3475–3493
Heenan & Coe	Bryant 1,	July 1918,	150	40	3192	3072–3189
Crosbie & Davis	J. E. Crosbie 1,	July 1918,	60	20	3600	1342–1367
Cunningham et al	R. E. Riddle 1,	July 1918,	10	8	3542	3313–3357
Joe Bartles et al	Gholson 1,	Aug. 1918,	1200	70	3489	3480–3489
Beaver Valley O. Co.	J. W. Barber 1,	Aug. 1918,	20	65	3420	3184–3210
Crosbie & Davis	J. E. Crosbie 2,	Aug. 1918,	20	20	1342	1325–1342
McAlester et al	H. Brashear 1,	Aug. 1918,	10	195	4000	3469–3493
Owen & Wilson	W. L. Yandell 1,	Aug. 1918,	25	15	3410	3175–3195
Prairie O. & G.	T. J. Earnest 1,	Aug. 1918,	300	160	3307	3302–3307
Sammies O. Corp.	Dean 1,	Aug. 1918,	20	12	3747	3192–3202
Sun Company	Allen 1,	Aug. 1918,	240	25	3040	3217–3233
Texas & Pacific	S. W. Bobo 1,	Aug. 1918,	540	400	3240	3220–3235
Texas & Pacific	H. Brashear 1,	Aug. 1918,	100	60	3305	3343–3387
Texas & Pacific	F. Brewer 2,	Aug. 1918,	2000	820	3305	3300–3305
Texas & Pacific	F. Brewer 11,	Aug. 1918,	2000	780	3307	3290–3307
Texas & Pacific	A. S. Davenport,	Aug. 1918,	200	15	3495	3485–3490
Texas & Pacific	S. V. Davis,	Aug. 1918,	1200	1200	3220	3116–3220
Warren Wagner	Merriman 1,	Aug. 1918,	2390	900	3275	3266–3275
Prairie O. & G.	T. & P. fee 1,	Sept. 1918,	30	100	3196	3191–3196
Prairie O. & G.	Keaghey 1,	Sept. 1918,	300	145	3205	3193–3205
Prairie O. & G.	W. Howard 1,	Sept. 1918,	1000	550	3515	3515–3517
Texas & Pacific	F. Brewer 9,	Sept. 1918,	1100	600	3298	3282–3298
Texas & Pacific	J. E. Butler 1,	Sept. 1918,	300	1075	3360	3357–....
Crosbie & Davis,	J. E. Crosbie 4,	Oct. 1918,	30	20	1335	1320–1335
Gulf Prod. Co.	F. W. Taylor 1,	Oct. 1918,	1200	950	3445	3444–3445
Heenan & Coe	Bryant 2,	Oct. 1918,	10	20	3212	3197–3112
Humble O. & R. & Frank Cullinan	J. W. Jones 2,	Oct. 1918,	1200	1100	3506	3505–....
Lone Star Gas Co.	Goforth 1,	Oct. 1918,	150	45	3495	3480–3493
Magnolia Pet. Co.	C. U. Connellee 1,	Oct. 1918,	30	20	1355	1322–1355
Magnolia Pet. Co.	W. E. Rock 1,	Oct. 1918,	3000	1800	3508	3505–3508
Plains O. & G.	A. J. Harrison 1,	Oct. 1918,	15	65	3260	3170–3185
Plains O. & G.	Rust & Weir 1,	Oct. 1918,	10	15	3372	3182–3190
Prairie O. & G.	J. R. Wood 1,	Oct. 1918,	1800	500	3468	3467–....
Ranger-Duncan et al	M. Sibley 1,	Nov. 1918,	30	(show)	3480	3445–3480
Plains O. & G.	Church Lot 1,	Nov. 1918,	1500	1500	3280	3275–3280
Heenan & Coe	W. E. Rock 1,	Nov. 1918,	1800	950	3545	3541–3545
Crosbie and Davis	J. E. Crosbie 5,	Nov. 1918,	40	20	1324	1335–1342
Texas & Pacific	Floyd Brewer 14,	Nov. 1918,	1200	1675	3285	3283–3285
Texas & Pacific	W. R. Hodge 1,	Nov. 1918,	700	1000	3480	3469–3480
Texas & Pacific	J. W. Tibbles 1,	Nov. 1918,	60	35	3435	3430–3435
Warren Wagner	Merriman 2,	Dec. 1918,	1200	1200	3285	3275–3285
Texas & Pacific	R. H. Clemmer 1,	Dec. 1918,	1000	1000	3290	3284–3290
Texas & Pacific	Floyd Brewer 3,	Dec. 1918,	1200	1200	3282	3272–3282
Heenan & Coe	W. E. Rock 2,	Dec. 1918,	1000	1000	3565	3562–3565

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BEAVEN-JACKSON LUMBER & VENEER CO., INC.

Evergreen, Ala., June 7, 1918.

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As to the guarantees on this truck, we consider them genuine as this Company has never failed to make any replacements asked of them without any questions. We highly recommend the Gramm-Bernstein Truck to be the best heavy duty truck on the market today, as we have seen others work and find that they cannot compare favorably with the Gramm-Bernstein.

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Sec'y. & Treas.

GRAMM-BERNSTEIN MOTOR TRUCKS

are appreciated most where working conditions are hardest. For it is in such service that the built-in quality and performance of these trucks most quickly and strikingly show. But in all lines, these characteristics mean longer life and lower cost.

THE GRAMM-BERNSTEIN MOTOR TRUCK COMPANY, LIMA, OHIO

MID-CONTINENT FIELD

NATIONAL PETROLEUM NEWS 402 COSDEN BUILDING, TULSA

Test Defines Productive Area To The Northwest In Ranger District

Staff Special.

TULSA, Dec. 30.

A NORTHWEST definition of productive area in the Ranger district of Texas is indicated in the Prairie Oil & Gas Company's Danley test, which filled up 3,250 feet with fluid from the top of pay encountered at 3,683 feet. This test is two miles northwest of the Emma Terrell well of the Prairie, which extended the productive area northwest from its Slayden. It is also northwest of the Rock wells of the Magnolia Petroleum Company, and of Heenan & Coe. It is in the general trend of the more than 1,100 acres acquired in the Ranger district by John H. Markham, Jr., of Tulsa, whose 520-acre Copeland tract offsets the Terrell well, the largest completion in the history of the field.

Abandonment Southwest of Ranger Dampening Influence

As against this proving up of previously undefined area, the vicinity of Olden's Switch, southwest of Ranger, has come in for a dampening influence because of the abandonment of the Magnolia's No. 2 Webb at 3,495 feet and the missing of the second pay by Westheimer et al in the Hamilton test.

The Webb was a mile south of Olden's Switch and the Hamilton closer to the railroad stop. The latter showed for a possible 100 barrels daily production after a shot at 3,249 feet.

Between the Hamilton and the Gulf Production Company's Roland, which also missed the deep pay two miles southeast, has been developing the line-fight of Hivick and Mohler, the Sinclair Gulf Oil Company and the Prairie Oil & Gas Company. The Prairie's Johnson had been drilled to the top of the expected "pay" but just to the north the Humble Oil & Refining Company's Patton also misses the deep production.

Production From Second Deep Pay

Production in the Rock wells, northwest of Ranger, comes from the second, or "deep" pay at 3,505 feet. They showed for 100 barrels at a shallower depth, 3,380 feet. In the Terrell, the pay was topped at 3,455 feet, the well making between 4,000,000 and 5,000,000 cubic feet of gas in addition to the oil.

The Connellee test of the Benedum-Trees interests, near Eastland, is now drilling below 3,450 feet in hard shale after passing up a showing for 25 barrels daily. It is five miles due south of the Gulf Production Company's Brelsford disappointment. Three miles east of the Brelsford, the Cosden Oil & Gas Company's Holcomb is now drilling at 3,545 feet at a depth lower than it had been expected the pay would be reached.

Operations have been generally quiet throughout the Mid-Continent over the period immediately preceding the holidays. This has been particularly true of Oklahoma and Kansas, the latter division developing nothing of unusual interest. In Oklahoma, a report of a showing for oil in the southeast quarter of the southeast quarter of Sect. 16-18-9W, turned attention again to the southwestern part of the state. The showing was found by the Magnolia Petroleum Company at a depth of 2,155 feet near the Stephens-Cotton county line.

Late Field News

TULSA, Dec. 31.—The Red Bank Oil Company test in Sect. 14-22-8, Osage County, Okla., which settled down to about a 30-barrel oil producer, is drilling itself in as a gasser under heavy pressure. It is estimated good for 20,000,000 cubic feet of gas from the Tucker sand.

TULSA, Dec. 30.—The Carter Oil Company's No. 3 Hayes, in the original Dev area of the Mervine pool, Kay county, Okla., came in making 800 barrels initial production.

V. O. Norval and others are swabbing No. 3 Bond, Sect. 2-25-5, north end of the Eldorado, Kan., pool, which made 103 barrels the first two hours. Sand was found at 2,580 and the total depth is 2,605 feet. Formation in No. 3 was 40 feet higher than in No. 1, which extended Cameron pool northeast and which still is a good pumper.

Magnolia Petroleum Company's Davis test, north of the Duke well in Comanche County and southeast of the Ranger, Texas, district, is showing for a good producer. This is the fourth test along the Eastland Comanche county line to show up good, stimulating development southeast from the previously defined field.

Casing trouble has delayed drilling in of W. J. Kanupp's test in Sect. 16-27-8, Osage County, Okla., a mile east of the big well completed by the American Pipeline Company and purchased at the last Pawhuska sale by the Gypsy Oil Company and others. The test is now on top of the Mississippi lime and shows similar sand records to the big well.

Texas Company's No. 2 Darks, offsetting Gulf Production Company's Fincher, Stephens County, Texas, is making 25 barrels at the expected depth, but is a disappointment because of being drilled into salt water. The Curry well, offsetting the Gulf's Davis, is making 75 barrels and it also was drilled into salt water.

Oklahoma Report

That part of the Osage in which the Boston and Sec. 8 pools were developed is being drilled up by operators seeking to test outlying acreage, some of the bigger interests taking part in the "play" for production. The opening of a new pool in the Hominy district by the Red Bank Oil Company, of Denver, Sec. 14-22-8, however, was heavily exaggerated in news-

paper reports, the well making less than 100 barrels initial production, altho originally touted for 1,000 barrels.

Both the Acacia Oil Company and the Sinclair Oil & Gas Company have leases offsetting the Red Bank tract, however, and it is expected that they will be drilled up at once. The 100 barrel well, which is 4½ miles southwest of Hominy, is on direct line between the Boston and Sec. 8 pools. It penetrated the Mississippi lime at about 2,400 feet and was drilled to total depth of approximately 2,800 feet.

Two miles east of the Red Bank Oil Company test the Atlantic Oil Producing Company (subsidiary of the Atlantic Refining Company) is drilling a test, and ten miles southeast of Hominy, E. N. Gillespie and Joseph F. Guffey, of Pittsburgh, are drilling four tests in the Wildhorse district. Gillespie and Guffey have organized under the laws of Delaware to conduct the business previously held in their names as individuals. The new corporation, capitalized for $7,500,000, of which preferred stock authorized and issued amounts to $2,000,000, will be known as the Guffey-Gillespie Oil Company. Common stock authorized amounts to 300,000 shares of no par value, of which 80,000 shares are reserved for conversion of preferred stock.

Has Exclusive Holdings

This corporation's extensive holdings in the Osage cover only a part of its 20,904 acres in twelve Oklahoma counties. Billings district property includes a half interest in the Humphreys Petroleum Company's 520 acre spectacular tract originally developed a year ago. The Guffey-Gillespie interests also hold 7,701 acres of leases in Kansas.

The Mervine pool, Sec. 15-27-3, Kay county, continues to be sharply defined to the 640 acres where the original wells were brought in. Tests both north and south of this section have limited the productive area in either direction in the 3,100-foot pay, but the holes being put down by the Carter Oil Company on both the Carter and Lindsey tracts will be continued to a depth of 4,000 feet if necessary. The Parker is in Sec. 22 and the Lindsey in Sec. 4.

No dry holes have been drilled either east or west of Sec. 15, leaving the "play" in these two directions undefined.

Magnolia Petroleum Company is underreaming 5-inch to 2,260 feet in its No. 2 test, Sec. 11-22-4W, at Garber, after topping a sand that may be the same as that found by the Carter Oil Company in its Stine test, more than a year ago. It is showing a little oil, but whether it will make a well was uncertain when this was written. At 2,118 feet, where pay was expected, there was only two feet of sand. The Magnolia's No. 1 Friend is reaching the interesting stage below 1,475 feet and its completion as a producer would extend the old Garber pool to the northwest. A 1,100-foot shallow gasser is supplying fuel for drilling.

That part of the Osage in which the Boston and Sect. 8 pools were developed is being drilled up by operators seeking to test outlying acreage, some of the bigger interests taking part in the "play" for production. The opening of a new pool in the Hominy district by the Red Bank Oil Company, of Denver, Sect. 14-22-8, however, was heavily exaggerated in newspaper reports, the well making less than 100 barrels initial production, altho originally touted for 1,000 barrels.

Both the Acacia Oil Company and the Sinclair Oil & Gas Company have leases offsetting the Red Bank tract, however, and it is expected that they will be drilled up at once. The 100-barrel well, which is 4½ miles southwest of Hominy, is on a direct line between the Boston and Sect. 8 pools. It penetrates the Mississippi lime at about 2,400 feet, and was drilled to total depth of approximately 2,800 feet.

Two miles east of the Red Bank Oil Company test the Atlantic Oil Producing Company (subsidiary of the Atlantic Refining Company), is drilling a test, and ten miles southeast of Hominy, E. N. Gillespie and Joseph F. Guffey, of Pittsburgh, are drilling four tests in the Wildhorse district. Gillespie and Guffey have organized under the laws of Delaware to conduct the business previously held in their names as individuals. The new corporation, capitalized for $7,500,000, of which preferred stock authorized and issued amounts to $2,000,000, will be known as the Guffey-Gillespie Oil Company. Common stock authorized amounts to 300,000 shares of no par value, of which 80,000 shares are reserved for conversion of preferred stock.

In Sect. 16-1S-9W, which is only a short distance west of the Magnolia Petroleum Company's original producer in the Duncan district, the Prairie Oil & Gas Company and the Magnolia each are getting a well at approximately the same depth as the one that first turned attention to the territory along the Cotton-Stephens county line.

The Prairie well is good for 60 barrels daily, and the Magnolia showing should result in the completion of a producer fully as good. The initial production of the original well was about 75 barrels, but its flow increased to 290 barrels the first 24 hours after it had been drilled thru a break in the sand.

Kansas Report

Tests of the Sperry Oil & Gas Company (subsidiary of the Oklahoma Producing & Refining Corporation of America) in Logan and Bloomington townships, Butler county, are expected to show the worth of "wildcat" territory to be freshly drilled.

Locations have been made for these tests on the Pettit tract, Sec. 22-28-6, and on the Brooks tract, Sec. 13-28-5. The latter is a mile and a half south of Tague-Weaver production. The Pettit is three and a half miles southeast of the Tague-Weaver. A failure was drilled by the Sperry Company a year ago on the Cain tract, Sec. 20-28-6, a mile south of the center of a line drawn directly between these two locations.

The Sperry Company has skidded rig to a new location in the southwest of Sec. 18-23-4, Elbing district, after losing the hole in the first test. This district, while not developing rapidly, continues to hold a major part of the interest taken in Butler county drilling, the Ramsey Petroleum Company's Scrivner, its Dedrick and the two Elbing Oil Company wells on the Leydig having turned the attention of operators to the northwestern part of the county over a period extending back to August, when the first Leydig producer was completed.

Watch Jollife Test Region

Northeast of the Leydig, in Marion county, attention is being drawn again to the vicinity of the Jollife test, Sec. 9-22-4, which a number of months ago developed a showing of oil believed by some operators to have a connection with the production found by the Elbing Oil Company in the Leydig wells.

The Theta Oil Company (Shaffer interests) is reported to have leased all of Sec. 33-21-4, a mile north of the Jollife which was drilled by the Elmhurst Oil Company, and to have made locations for tests. The Elmhurst Company is getting ready to run a string of 5-inch casing in the Jollife, which was never satisfactorily completed, and on the Gillette tract, Sec. 10-22-4, it is drilling below 1,250 feet.

The Enyart tract of the Empire Gas & Fuel Company, the leader in Towanda pool production since the decline of the Gypsy Oil Company's phenomenal Shumway lease early in the summer, still is the most productive property in Butler county. The combined daily production of the 53 wells at this time is approximately 7,500 barrels.

Two "wildcat" locations have been made by the Carter Oil Company, eight miles north of Burns, Kan., on the Mabel Jensen tract, and on the George Berddeau tract, near Yates Center. The Phenix Oil Company test on the Lampe tract, a "wildcat" in Sec. 33-26-7, eastern Butler county, is now drilling below 3,000 feet.

The older fields are without spectacular development, and the principal side-attraction to the "wildcatting" under way is the plan to construct a concrete highway from Eldorado to Towanda, thence south to Augusta, which would have its final terminus at Douglass, in the extreme southern part of Butler county. It is said enough signers have been obtained to the petition among citizens canvassed to assure the success of the project. Pending this construction work, however, operating oil companies are giving financial aid to keep up dirt highways now being used.

17 New Wells Xmas Week In Kentucky

LEXINGTON, KY., Dec. 28.—Oil operators in the Kentucky fields were affected by the Christmas holidays, and but seventeen wells were drilled in the past week, and out of that number four were dry and thirteen were producers. A new production of 765 barrels daily is represented by the thirteen producers completed.

In Lee county, Dick Veitch drilled in No. 1 on the Chas. Evelyth farm rated at 100 barrels. The Producers Petroleum Company scored a 10-barrel well at their initial test on Hell Creek. The Tom Corwin Oil & Gas Company also got a 10-barrel well at No. 3, Marion Shoemaker. On the E. S. Moore farm, J. H. McClurkin and others have completed a 40-barrel well. Bernell Oil Company, drilling on the Simpson Crabtree farm, got a 100-barrel well. The Wright Oil Company's No. 2 on the Matt Clay came in flowing and looks good for 200 barrels or better. W. P. Williams Oil Corporation got a dry hole at No. 3 Crate-Miller.

In Powell county the Swiss Oil Company got two 25-barrel wells at Nos. 8 and 9 Jacob Townsend.

In Wolfe county, Stevens & Garrison got a 10-barrel well at No. 1 J. S. Garrison.

In Estill county the Wood Oil Company's No. 13 Dan McCoy is credited with 5 barrels.

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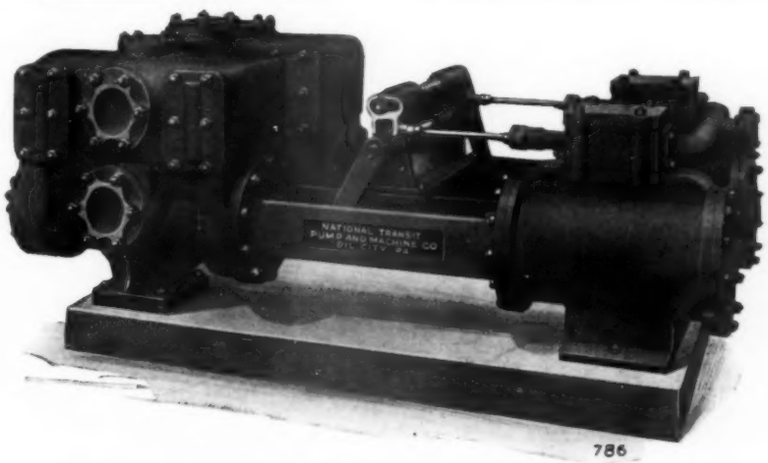

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Oil Companies Begin Drilling Operations In New Mexico

By Special Correspondent.

EL PASO, TEX., Dec. 28.—Thirty-two thousand acres of land have been leased in Curry county, New Mexico, by the Carter Oil Company of Tulsa, a subsidiary company of the Standard Oil Company of New Jersey, and negotiations for other leases are being made. This enterprise is being carried on in addition to other operations of the same company in New Mexico, which already includes the control of 400,000 acres leased for development purposes in Valencia and McKinley counties.

Reports from Clovis, New Mexico, indicate that the Carter people are considering extending their field of operations to Roosevelt and other counties of eastern New Mexico, and that a test well will be drilled as soon as the desired percentage of land in Curry county is secured.

F. D. Thomas and H. W. Young, oil geologists in the employ of the Carter company, have been in the Arizona field for several weeks looking into oil prospects there, and devoting their attention particularly to the district southwest of Winslow, between Clear Creek and Chevelon Creek.

Other operations of the Carter company in New Mexico include the control of four leases of 160,000 acres each on the property of the McKinley Land & Lumber Company in the Zuni Mountain region of McKinley and Valencia counties. These negotiations were carried on from the Denver office of the company, prior to its incorporation in the state of New Mexico.

Under New Mexico Charter

At the present time the Carter Oil Company is operating under articles filed in the state, and has an office at Albuquerque, under charge of Homer Lee. Several leases have been secured by Mr. Lee in the Seven Lakes region under the New Mexico charter.

Plans for the drilling of two wells are being made by the Texas Oil & Coal Company, on their property near Rano, New Mexico, in the Glen Rio district, and near Endee, New Mexico. This property is not far from Amarillo, Tex., and is said to bear excellent prospects of oil. Oil-bearing shale is found on the surface, according to geologists who have examined the district. A plant for the extraction of potash has been constructed near San Jon in this district.

Expenditure of a quarter of a million dollars in test and prospect drilling is proposed by a triple combination of the Gypsy and the McMan oil companies, and the Ohio Cities Gas Company, operating in northern New Mexico twenty to thirty miles south of Las Vegas. The three concerns have shipped in one of the finest rigs ever used in the state, and are preparing to drill all over their holdings. One 22-inch hole is already down 2,000 feet. The holdings of the three companies combined aggregates more than a half million acres.

Another company largely interested in the Las Vegas district, and which has been drilling for more than a year, is the Toltec Oil Company, controlling more than a million acres under state lease.

Quay and Union counties in New Mexico are the seat of operations of the Sinclair Oil Company, with headquarters at Tucumcari. This concern entered the field two months ago, and proposes to begin drilling operations with the first of the new year.

S. G. Humphries, of El Paso, proprietor of the Hotel Paso del Norte, with a number of other El Paso men, have entered the Pecos Valley field, and are putting down an 18-inch hole. The Illinois Producing Company has also entered the Pecos field recently.

State leases covering more than 30,000 acres have been secured by J. J. Ayers, of New Mexico, near Oscuro and Carrizozo, N. Mex. He has interested an Oklahoma oil company in the enterprise. One well, drilled by the McCafferty Oil Company in this district near Oscuro, has gone down over 1,600 feet in oil shales. Besides these two concerns more than twenty smaller companies are entering the New Mexico field in eastern and southern New Mexico. One of these concerns, the Mesa Verde Company, of Colorado, operating in the San Juan district, encountered two small oil pools at a shallow depth in the Aztec field.

In southwestern New Mexico, in the Columbus district, development work goes steadily forward. The Valley Oil Company headed by E. C. Kniffin is preparing to continue drilling as soon as extra equipment can be obtained from Los Angeles. The hole is now down 1,970 feet. One pocket of high grade oil was struck at 900 feet but was cased off for later development. It is expected that oil will be struck between 2,100 and 2,400 feet if at all.

Oil Seepage Is Found

Mr. Kniffin in association with W. B. Randall of the Palomas Lake Oil Association of this district controls about 25,000 acres. Columbus and El Paso people are backing the corporation. Oil seepage is found on the margin of Lake Palomas, just across the international boundary, it is claimed.

In Arizona, the Holbrook field occupies considerable attention. The Apache Oil Company is installing oil burning engines at its rig seven miles from Holbrook. The Hopi Oil Company which has been developing water expects to resume oil prospecting immediately. The Adama Oil & Land Company is another concern working in this field.

Get Good Well In Big Injun Sand In West Virginia Field

PITTSBURGH, Dec. 30.—Oil has been encountered in the Big Injun sand in Lewis county, West Virginia, and as the South Penn Oil Company is the pioneer in striking pay in this sand it is expected that additional operations will follow. This was the outstanding feature of holiday week in Pennsylvania oil circles.

The South Penn's discovery is on the W. M. Burnside farm at the mouth of Sand Fork, Freeman's Creek district, Lewis county, and the first ten hours after it was struck it flowed 25 barrels. Later a gauge taken at the end of 24 hours' flow showed a production of 110 barrels in that period. The well is now shut in but will be drilled deeper as soon as connection has been made with a pipe line.

The well is located in old territory but is the first well in that locality to get oil in the Big Injun sand. Many years ago the Sand Fork pool was one of the greatest sensations in the oil development of West Virginia and much interest has been aroused in the latest strike.

Another Injun sand development of note is the Hope Natural Gas Company's gasser at No. 3 on the Miller farm, near Pine Grove, Greene district, Wetzel county. The same company's test on the Yoho farm is a gasser in the same formation. The Hope Company has two gassers in the Gordon sand at other Pine Grove tests. West of Pine Grove, but still in Greene district, the Silver Hill Oil Company has a 25-barrel well on the Steele farm, the pay having been struck in the Gordon sand. Drilling from the Big Injun to the Gordon sand in the same locality, the Benedum-Trees Oil Company got a 25-barrel producer on the Snodgrass farm.

Godfrey L. Cabot celebrated Christmas week by bringing in a large gas well and a fair oil well. The gasser, which is showing 5,000,000 cubic feet daily, is No. 9 on the Goff-Heck farm in Spencer district, Roane county, the pay having been struck in the Berea grit, while the oil well, which is good for 20 barrels daily in the Big Injun sand, is on the Bennett farm in Sherman district, Calhoun county.

Doddridge county has several completions of note at the close of the year. The Hope Natural Gas Company got a 10-barrel pumper at a Big Injun sand test on the Gully farm in New Milton district, the Pittsburgh & West Virginia Gas Company got fair gassers on the Lodge, Gaston and Gray farms in southwest district, the Hope Company has a Big Injun sand gasser on the Bode farm in Cove district, also a gasser on the Cumberland farm in McClelland district, and the Philadelphia Company has a gasser at No. 3 well on the Allen farm. The latter two wells are near former producers in the McClelland district. In this district tests are under way for the Carnegie Natural Gas, Keystone Oil and McIntyre & Company interests.

Not to be outdone by the Lewis county achievement, Marion county returned to its former place of prominence in the South Penn family by presenting an 80 barrel well in the Maxon sand, oil having been encountered in the famous Mannington district. It was the South Penn's second test on the Rice farm. The Manufacturers' Light & Heat Company has a 5-barrel pumper in the lower formation of the 30-foot sand in Glover's Gap, Mannington district. The Hope Natural Gas Company got a 5-barrel pumper in Clay district, Monongalia county.

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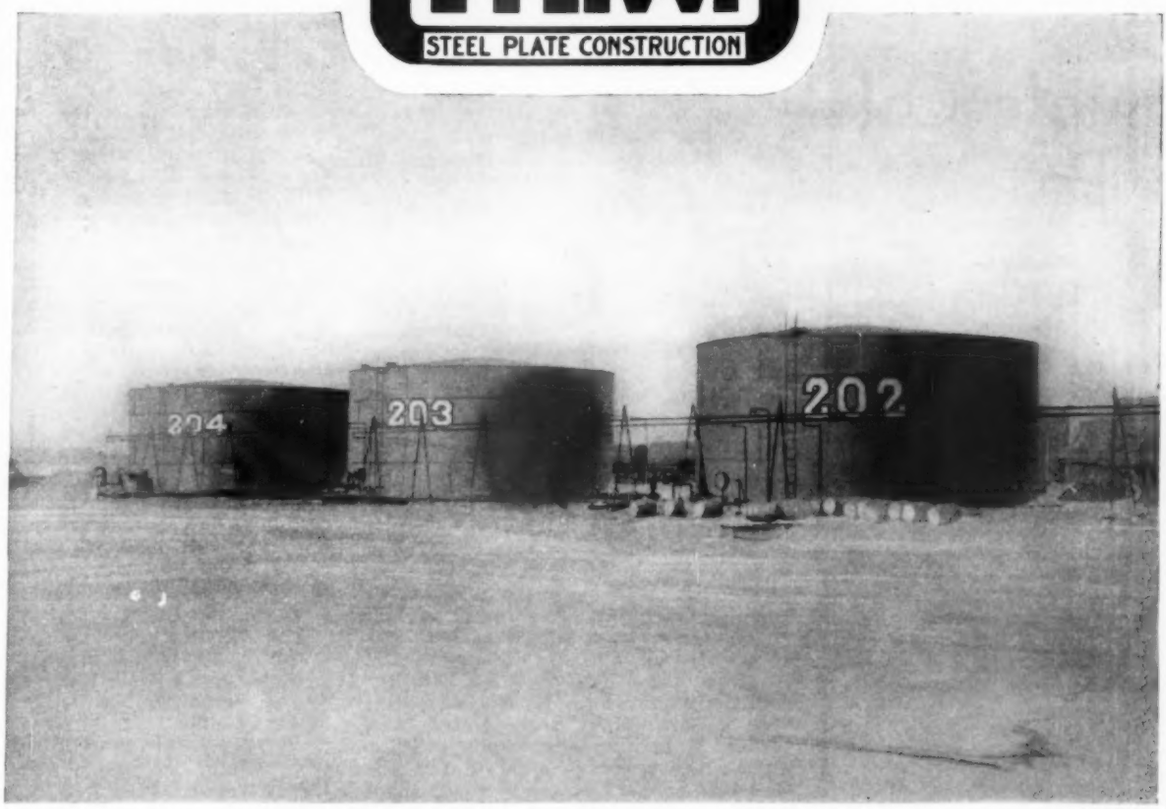

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High Grade Crude Found In New Well In Pine Island District

By Special Correspondent.

SHREVEPORT, LA., Dec. 27.—The action of the pipe line companies in stating their inability to take any new production from the Pine Island district has had a paralyzing effect on the oil industry in this territory, and very little new work is being started. A few operators are optimistic enough to believe that the situation will be adjusted by the time their wells come in, and are going ahead with drilling operations, but in most cases everything is being shut down wherever work can be stopped without injury to the wells. Orders for materials and machinery are being cancelled whenever possible and, so far as is known, no definite plans for relief have been worked out by the Independent producers.

According to their promise, the pipe line companies themselves are voluntarily sharing the hard luck of the Independent producers by shutting in their own new wells instead of running their oil in preference to that of the producers who would otherwise be at their mercy, and practically all new development by the big companies as well as the small ones is at a standstill.

The 1,000-barrel well completed on the Herndon least last week was immediately closed in and none of the oil is being taken. The Caddo Oil & Refining Company completed a 400-barrel well in No. 4 Noel, Sect. 25-21-15, and the oil is being run into pits dug for the purpose rather than shut in the well and take chances of killing it. A small pumper was completed by the Texla Oil Company on the Caddo Mineral Land Company lease in Sect. 25-22-15, in the Hosston district, where much of the production is handled in tank cars.

An important feature of the week's development was the completion of a 10-barrel pumper of 42 gravity oil by the Romax Oil Company in No. 4 Pardue, Sect. 27-21-15, the first high-grade oil discovered in the Pine Island district and opening up vast possibilities for future development.

Another interesting feature was the completion of a 20,000,000-foot gas well in Palona county, Texas, by the Gulf Production Company in their second test on the W. C. Agurs lease. Numerous tests in this territory have resulted in small pumpers of high gravity oil, and the discovery of gas in large quantities warrants the assumption that a pool of more than ordinary importance has been uncovered, and one which will probably lead to considerable new development.

The Arkansas Natural Gas Company has started drilling on the Esterling lease in Sect. 34-21-15, and is testing for oil at 2,300 feet in the Ballark Island well in Sect. 35-20-15, east of Mooringsport.

The Allies Oil Company is drilling on the Guy lease in Sect. 29-21-15, and the Republic Oil & Refining Company's No. 4 Hardy in the same section is closed down at the 8-inch casing.

The Red Banks Oil Company has started drilling No. 1 Campbell, Sect. 2-20-15, in the south end of the Pine Island district, and in this locality the Sunflower Oil Company is drilling at 2,000 feet in No. 1, Lot 30, Sect. 3-20-15; Wickett & Hancock are rigging up to drill No. 1 Hicks in Sect. 2-20-15; the Bradford Oil Corporation is rigging up to drill in at 2,200 feet in No. 1 Dickson, Sect. 1-20-15. The Ranger-Pine Island Oil Company has set 6-inch casing in No. 1 Hutchinson, Sect. 3-20-15, and is temporarily closed down.

G. W. Strange is rigging up to drill No. 1 Crouch & Glassell in Sect. 27-21-15; Freedman & Rowe are drilling at 1,500 feet in No. 1 Noel, Sect. 25-21-15; Hogan & Olliver are rigging up to drill No. 1 Pyron in Sect. 34-21-15; the Lake Oil Company is rigging up to drill No. 2 Wells Heirs in Sect. 10-21-15; the Romax Oil Company is rigging up to drill No. 2 Noel and building derrick for No. 3 in Sect. 25-21-15, and Carsden et al have set 6-inch casing in No. 1 Dickson, Sect. 36-21-15.

Avery & Martin are drilling No. 1 Barnett in Sect. 10-21-15; the Atlas Oil Company has one well drilling on the Logan lease in Sect. 26-21-15; Baker et al are drilling No. 3 on the Caddo Mineral Land Company lease in Sect. 23-21-15, and the Banks Oil Company has one well drilling on the Wells lease in Sect. 10-21-15.

The Black Bayou Oil Company is arranging to pump No. 1 Dillon in Sect. 22-20-15, and has started drilling No. 2 on the same lease; the Caddo Oil & Refining Company has two wells drilling on the Noel lease in Sect. 25-21-15, and one on the J. S. Noel in Sect. 30-21-14; the John Clark Syndicate is down 1,000 feet in No. 1 A. S. Oil & Gas Company in Sect. 2-21-15, and the North Star Oil Company is down 150 feet in No. 1 I. Blanchard, Sect. 8-21-15.

Efforts to get production in the west end of the Pine Island district have not proved very encouraging. The Gulf Refining Company went into salt water in the shallow sand in a test on the L. Z. Crawford lease in Sect. 19-21-15, and the well has been abandoned. The Major Oil Company got salt water in a test on the Garner lease in Sect. 17-21-15, at the usual depth, and is making a deep test to the 2,600-foot sand. The Nash Oil Company is drilling on the Waters lease in Sect. 17-21-15.

In the Bull Bayou district, in the De Soto and Red River Parishes, Keen & Woolf are rigging up to drill No. 1 King in Sect. 26-12-11, an interesting test about half way between the Bull Bayou Oil Company's well on the Armistead lease and the Developers' Oil & Refining Company's well on the Safford. The Dixie Oil Company is rigging up to drill No. 1 Harp in Sect. 36-12-11, a mile further south, and within a mile of the Developers'. The Gulf Refining Company has two wells drilling on the Wemple lease in Sects. 24 and 23-12-11, and two miles east of these wells the Arkansas Natural Gas Company is building derrick for a test on the Hollingsworth lease in Sect. 19-12-10. The Bull Bayou Oil Company is building derrick for No. 2 Armistead in Sect. 23-12-11, and have made a location for No. 3 in the same section, and Freedman-Rowe et al are building derricks for No. 1 and No. 2 Carter in Sect. 13-12-11.

PRODUCTION ENGINEERING

By H. B. GOODRICH

Appraisal Curve Best Method For Valuation Of Oil Field Properties

In line with the purpose of the Production Engineering Department of NATIONAL PETROLEUM NEWS, to deal with real problems that confront men in the oil producing business every day, Mr. Goodrich in the accompanying article discusses the problem of appraising the value of undeveloped or partly developed oil lands, one of the most perplexing questions in the business, upon the correct answer to which may depend a good profit or a big loss.

Mr. Goodrich describes the various methods in use, and points out the faults and inaccuracies that must be guarded against if property is to be successfully appraised. This department will be a feature of the paper twice a month.—Editor.

IT has been stated in a previous article that deeper oil deposits which may be reached with improved methods of development are likely entirely to controvert pessimistic estimates of a short oil future for the United States. It has happened often in the past that just at the moment when oil fields are playing out and no new ones are in sight, that some operator, braver than the rest, or luckier or (what is more generally true) with a more far-sighted vision, goes a bit deeper than usual and uncovers a new oil deposit.

It is not always luck. It certainly was not luck, for instance, in December, 1913, when the entire production of the Cushing field was down to 12,000 barrels daily, that a well was put down thru the Wheeler sand and into the Bartlesville sand. The latter brought the Cushing field into the limelight and held it there with its great production, which for some time was not a source of unmixed joy to the producer who wished to sell his crude at something more than a mere living price.

It has been said that there never will be another Cushing. We certainly trust there will not be a repetition of the disadvantages of over-production attendant upon the development of 1914 of that field, but at the same time we can hope, and it is not beyond the realm of possibility, that there will be not one but many areas equally prolific in the as yet untested regions of this country. And in the untested must be included not only wildcat acreage, but also such districts as have been "drilled up" in the shallow sands.

Development Still In Infancy

The coincidence (which almost appears to be a law) of opportune discoveries has held good so far in oil history and there are very good reasons for believing that oil development as a whole has not yet passed beyond its infancy to a stage where that law should become inoperative.

All this is speaking generally. There are, of course, oil regions or districts that have attained old age, whose life may be prolonged, but which must be protected at all points. The question that must be applied to each individual case is to what period of growth has the particular district, field or lease attained.

Is it still young, susceptible of further expansion or has it reached its maximum and is it now on a decline? Upon the correct decision of this question depends the proper solution of the valuation or appraisal problem upon which all subsequent operating problems more or less depend.

Just as each particular well on any lease has generally an individuality of its own, a certain behavior that distinguishes it from others, so each lease, while it has general characteristics in common with its neighbors, should be treated as a separate entity, both in the matter of development and operation. It is only by the combining of the best practices of the component parts that an estimate can be made of the suitable methods of treatment of the whole pool or district. It appears that one mistake in past oil field procedure has been in ignoring this fact. Too often general rules have been widely applied without sufficient study of the varying complicated details of the general problems. This has been true in attacking various operating difficulties. It has also been true in the basic problem of valuation.

Geology Only Guide.

Properties are either entirely undeveloped or they are partially or fully drilled up with a flush or with a so-called settled production. In undeveloped properties the only guide to an estimate of value is geology. It is no disparagement of that science to say that in the early development stage of a lease geology is a guide only in so far as probabilities are concerned. All the underground conditions can not be known in advance of the drill. A conservative, reasoning comparison with the known conditions in other nearby fields or in the same formations may prove of great assistance in determining the probability.

It is generally, however, very dangerous to attempt a cash valuation on such grounds, nor should a hard and fast prediction of outcome be made on undeveloped properties where the range of error must necessarily be wide. Sometimes this has been attempted with success, but oftener with disastrous or erroneous results.

Two cases in point whose results were opposite may be mentioned. The first was in California. About fifteen years ago the development in the Midway-McKittrick field was close to the "outcrop" along the foothills of the San Diablo range. The valley country to the east, known as the "Flats," was considered no good or condemned by reason of a few water wells. But as geological knowledge progressed it was decided and found that conditions in parts of the "Flats" were favorable and a large area was thereafter brought into production with gushers of the Lakeview type.

In the early days, then, there was certainly a general ultra-conservative undervaluation of a subsequently valuable territory of great extent. The second case is in the Mid-Continent field. Proceeding upon what appeared to be reasonable comparison with a sand of known productivity in another part of the region, a very large price was paid for an undeveloped property of small acreage. What could not have been foretold was a local tightening of the sand so that when wells were drilled in, and found oil indeed, the well output was so insufficient that it is very doubtful when—if ever—that particular property will pay out.

Are Mere Prospects.

Undeveloped properties are mere prospects. They should be so regarded, and while there may be reasons to believe they may become valuable, the investor or operator should recognize that there is perhaps even more of a gamble in such propositions than in a mine prospect upon which no shaft has been sunk and no ore yet blocked out.

As regards developed properties it is very difficult to draw the line between partially and fully developed ones. There are many cases of individual leases (the same is true of pools), parts of which are in the infancy of production, just beginning their life, while other parts have reached old age. This was the fact at Cushing with its old and sometimes exhausted Layton and Wheeler production with new Bartlesville wells on the same leases.

In such cases, where there are in the present many producing sands, or new sands are to be expected in the future, valuation becomes extremely complicated. As a general truth it is best to take exactly what one has at any particular time, to base all estimates upon that only, making due allowance for decline natural or otherwise, and to consider future discoveries as highly to be desired but purely speculative in their relation to practical values.

According to one method of valuing properties, the area, the thickness, the porosity and the saturation of the sands are taken and reduced to barrelage per acre to determine the capacity of the reservoir. From this is calculated the amount of oil recoverable. The first two factors are determined in the field from geologic and well observations while the porosity and saturation are to be determined by laboratory tests of samples from wells. Close estimates along these lines are rare exceptions and it has been found that that method has so many unknown and uncertain factors that even the most conservative handling of the figures generally gives erroneous results.

Can't Foresee Lensing.

For instance, in the case of a partially developed property there is great question how much of the deposit is blocked out or proved by any one well. The geologist may by addition to his knowledge as furnished by the well logs, give dependable testimony as to the extent of the sand, but he can not in many cases pre-

dict a local tightening or lensing that will cut out production from one location to the next.

A few years ago a dry hole in Oklahoma was taken to condemn a whole township. Now it is a common saying that a dry hole condemns only its own diameter. This extreme statement being partially true is not the converse true, and, for the purpose of valuation, does a producing well prove any more than that there are certain drainage channels leading toward that well the areal extent of which is not definitely determinable?

As for the thickness of the sands, the top and bottom of the oil or gas bearing formation may be obscured. For example, a high pressure gas well drilling in often blows the cuttings to the top of the derrick in the form of dust. It would be a wise man who could say definitely under those circumstances just what the thickness may be or whether all the formation is of sand.

Such cases are not the exception, in fact under most favorable circumstances the personal factor plays such a large part in determining the thickness of the pay that there are differences in estimating both the extent and thickness. There must then be still greater differences in arriving at the cubic contents of any oil reservoir.

Porosity Vital Factor.

The porosity of the sand is still another part of the equation and a very necessary part if there are to be any reliable estimates of capacity. Either a vast number of experiments on a large number of representative samples of the particular oil or gas bearing sand should be made so as to obtain an average porosity or grave errors are introduced. To obtain a correct mine value the sampling is most thoroughly done. It is not sufficient to take a small hand sample and from the contained value estimate a large tonnage value. And yet in sampling a well one is necessarily limited to a most infinitesimal hand sample upon which to base estimates of a large area.

In this connection it is interesting to note a report on the natural gas resources of north Texas, which was undertaken about three years ago by the U. S. Geological Survey. No harsh criticism of that report is intended, for the investigation was very thorough and painstaking and it filled its purpose, which was to give some idea,, however general, of the reserves of gas available for cities in north Texas, including Fort Worth and Dallas. Furthermore, the authors frankly state that there were no known precedents to guide them, altho as a matter of fact, unknown to them, the same method had previously been used, and they had to work out their own method of estimation.

Furthermore, they state in what respects their conclusions are merely estimates and give the evidences at all stages. Their calculation depends upon the average thickness of the gas-bearing sand, the average percentage of pore space in the sand and the pressure of the gas.

In this report one is struck with the fact that to determine the pore space of the gas sand which underlies 15 square miles, with a thickness (averaged by the geologist from log records) of 30 feet; namely, a total volume of 12,545,000,000 cubic feet, "a few fragments of the producing sand, one-fourth to one-half inch and one two inches in diameter were procured." These samples were tested and after making certain allowances the space occupied by gas was estimated at about 2,500,000,000 cubic feet.

Surely such insufficient data could not be relied upon in any businesslike mining venture. One may give due weight to the conclusions therefrom as respecting individual opinions, but they do not impress one as facts, but rather as showing conceivable limits within which there must be a very great range of error. The fact is that any method of valuation which depends upon figures derived from unprovable, unseen data must be extremely hazardous to follow.

Other Valuation Methods.

There are other methods of valuation, one of which is by comparison with already exhausted regions or properties and by reducing the amount of oil recovered to a per-acre basis, to apply this to similar properties. From this the ultimate recovery from unexhausted properties can be estimated. This method is a step forward in that it uses the experience of the past and eliminates the theoretical uncertainties and conditions of formation and to a large extent unforeseen operating difficulties that may arise.

A third method is that of the production curve by which the past performance of a well, group of wells, a lease or pool is platted for as far back as the records may extend. This curve shows the decline thru a period of years and by projecting it into the future the average life of wells or property can be estimated. Such an estimate will of necessity be much more within reasonable limits than any others, for it takes into account only averages of production and operating methods.

The plan of estimation is fully described in Transactions of the American Institute of Mining Engineers, February, 1918, by Messrs. J. O. Lewis and Carl H. Beal, who have worked out some very interesting results in the Osage and eastern Oklahoma by means of these "Appraisal curves."

While the appraisal curve is subject to many improvements, the method offers the most logical of any. In it the theoretical phases of oil development are reduced to a proper place in the problem. It can be applied at any time during the life of a property.

Revive Cal. Pipe Line Common Carrier Case

By Special Correspondent.

LOS ANGELES, Dec. 30.—Early in 1919, the state railroad commission will hold a hearing to pass upon the adoption of rates and regulations for the operation as common carriers of oil pipe lines thruout California. The question was up last April and was laid on the table indefinitely at the request of the Fuel Administration, despite the strong protests of the petitioner, J. W. Jameson.

Now that the war is over, Mr. Jameson, an Independent producer, has filed an informal request that the commission take action on its own initiative to re-open the case or indicate what course it would prefer that he should take to bring up the matter officially. Alfred L. Black, counsel for Mr. Jameson, says that unless the commission acts quickly he will file a formal demand for a hearing.

Under the circumstances, some interest is taken by oil men in the identity of three new commissioners to be appointed shortly by Gov. Stephens. They will constitute an absolute majority of the membership of five.

Chairman Thelan resigned some months ago to enter the federal service and his position has since remained vacant. The official terms of two other commissioners expire January 1st. Commissioner Gordon has announced that he has no desire for further public employment. In this connection it may be noted that during the gubernatorial campaign Mr. Gordon was an ardent supporter of Francis J. Heney, the author of the pipe line law, and a close personal friend and political associate of J. W. Jameson, the petitioner before the commission, for its enforcement.

The common carrier pipe line law, drawn by Heney, and lobbied thru the legislature of 1913 by himself, Jameson and Timothy Spellacy—the last another political supporter of Heney—has been more than five years on the statute books unenforced, having been held up until nearly a year ago by court proceedings instituted by the Associated Oil Company and by the Producers' Transportation, each separately, making its fight to have the law declared unconstitutional.

The Associated was successful in getting a judgment holding the law void so far as it applied to itself or to any company which had not made itself a common carrier by transporting oil for others for hire.

Apparently, the judgment makes the law void, also, as to the Standard and the General Petroleum, both of which accepted its provisions under protest without resorting to the courts. Jameson and his counsel contend that they are now barred from contesting the law or from taking advantage of the decision in the case of the Associated. The counsel for the Standard and for the General Petroleum, however, have stated that they entertain a different opinion. A contest by them is fully expected whenever an attempt is made to put the law into effect.

As to the Producers' Transportation Company, the state supreme court held that by its own articles of incorporation and its policy of carrying oil for the 170 members of the Independent Oil Producers' Agency for hire under contract, this company had made itself a common carrier, and thus, as applied to it, the law was constitutional. From this judgment an appeal has been taken to the Supreme Court of the United States, and an injunction has been issued against any action being taken by the railroad commission pending final judgment.

On the face of things, it looks as tho the only pipe line in the state against which the commission can take action with reasonable assurance of not having a legal battle on its hands is the Shell's line from Coalinga to Martinez, which was built after the enactment of the law, and has not taken any steps in opposition to its provisions and had to accept them formally before beginning work.

Independent refiners are watching the proceedings with much interest and say that they give the Jameson movement their moral support, altho none of them have publicly associated themselves with it. If successful in having the pipe lines thrown open to public use, they entertain hopes of a limited relief for themselves, altho admittedly there will still be serious problems in the way of getting very substantial results.

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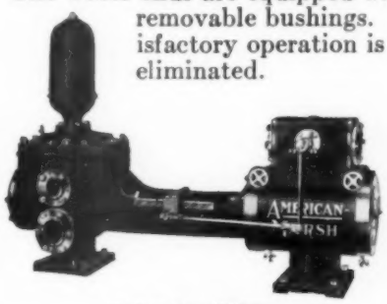

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Mines Bureau Designs Model Explosion Door For Tank Roofs

A FORM of explosion door for storage tanks, for either crude or refined oil, which has been approved by the United States Bureau of Mines after considerable investigation, consists principally of a quarter-inch aluminum plate of about 42 inches diameter covering a circular hatch and having a flange near its circumference which fits into a trough filled with some oil or paraffin mixture to form a seal. The specifications for the construction of a 55,000-barrel crude oil storage tank which have been issued by the Bureau call for eight such explosion doors located on the roof.

With their installation the Bureau experts believe that, even where a tank is ignited by lightning or some other cause, the chances are in favor of saving at least the shell from injury, if not also the roof, the explosion doors permitting relief from the pressure caused by expansion of the gas.

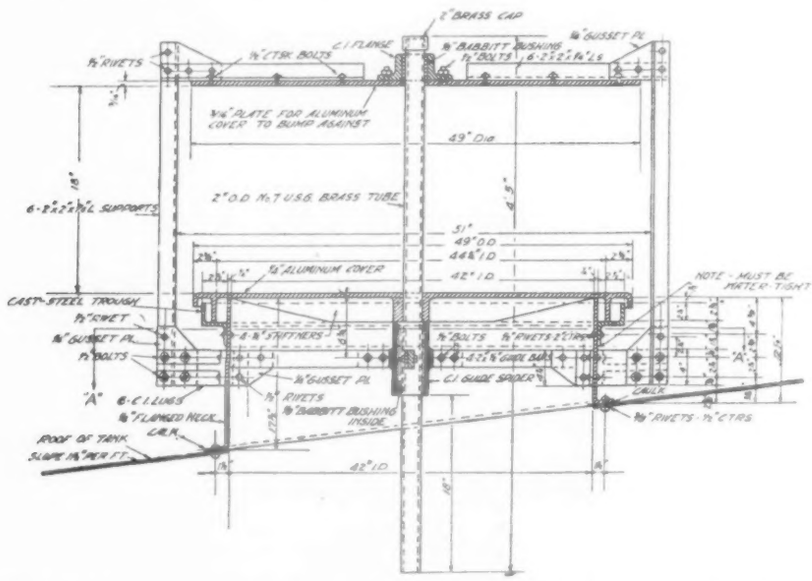
A description of this approved type of explosion door as given in a recent Bureau publication is as follows:

"Altho it is obviously impracticable to attempt to design explosion doors of sufficient area to take care of extreme conditions, as when a tank becomes almost completely filled with a mixture of hydro-carbon gases and air in the proportion best suited for rapid oxidation, it must be remembered that such conditions seldom, if ever, exist. Storage tanks when the oil is quiescent are usually kept full, and those from which oil is constantly being drawn and replaced would probably only occasionally contain the theoretical mixture conducive to explosion, there being most of the time a mixture either too rich in hydrocarbons or too rich in air. Therefore, the writer believes that where a tank is ignited, the chances are in favor of the possibility of saving at least the shell from injury, if not also the roof, by providing a reasonable number of vents thru which a part of the pressure caused by an expansion of gas may be relieved. Eight explosion

Type of explosion door approved by the U. S. Bureau of Mines

doors, each having an area of approximately 9 square feet, are prescribed in the specifications.

"This type of door consists essentially of an aluminum plate ¼ inch thick which covers a circular hatch, and has a flange near its circumference fitting into a trough about 2 inches deep, surrounding the upper edge of the hatch. The trough is filled with a mixture of paraffin and oil, or sand and oil, to form a seal. The cover plate slides on a brass rod 2 inches in diameter. The upper end of the rod is supported by a plate 18 inches above the top of the hatch, which is held in place by angular supports 2½ by 2½ inches by ¼ inch. This rod fits in babbitt bearings at the top at the point where it passes thru the aluminum plate, and in the spider beneath the plate. It is supported at the top bearing by a metal cap and hangs loose so that it is free to move on all three bearings if necessary. If an explosion occurs the pressure on the bottom of the aluminum plate is of the same intensity over its entire area. Should the bearing between the plate and the brass guide rod stick, the plate could still move upward by carrying the rod with it. When the pressure is released after the escape of the gas, the plate slides down the rod by its own weight and closes the opening."



Horizontal cross section through hatch and explosion door showing detail of construction as worked out for installation on 55,000-barrel crude storage tank

Oil Union Activity In California Is Political

By Special Correspondent.

LOS ANGELES, Dec. 30.—Beginning December 27th, the federal oil conciliation board is holding a series of hearings as to wages and hours of work in California refineries and as to the increase of $1 a day asked in the wages of field workers.

Secretary of Labor Wilson has instructed the board to assume jurisdiction over the refineries and pipe lines, which were excluded from its authority when it was organized at the Santa Barbara conference between Verner Z. Reed as federal mediator on the one hand and the representatives of the companies and of the workmen on the other.

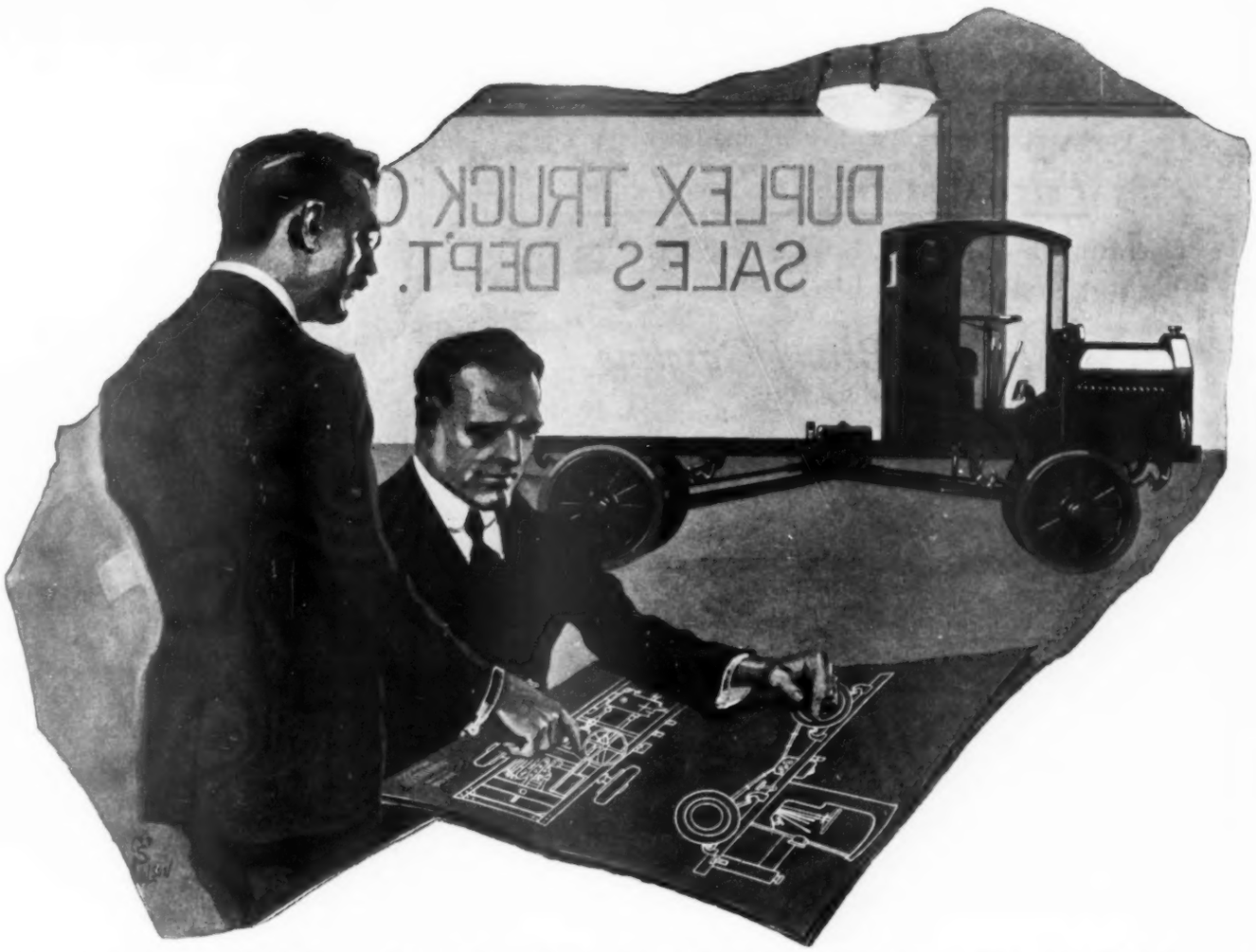
The hearings were to be held at the office of the board, 820 Union Oil building, Los Angeles, at 10 o'clock a. m. on the following dates: December 27-28, with representatives of companies operating refineries, gasoline or topping plants; December 30th, with pipe line companies; January 3rd-4th, with producing and development companies; January 6th-7th with representatives of the workmen. The board consists of L. P. St. Clair, president of the Independent Oil Producers' Agency, chairman; G. M. Swindell, secretary of the Los Angeles Chamber of Mines & Oil; W. F. Byrne, representing the workmen.

Notwithstanding the end of the war for the period of which the federal mediation was originally accepted, and notwithstanding the talk of hotheads in some of the local unions, it is expected that the decision of the board will be accepted by both sides, altho the local at Fellows did pass a resolution calling for a strike if the full demands were not at once granted.

The removal from office of Walter J. Yarrow is thought to have been a victory for conservatism. At present, W. F. Byrne, representative of the workmen on the conciliation board, and an ultra-conservative union man, is apparently again in the saddle. At one time he was almost an outcast from their ranks because of his stand against radical plans.

Whether the oil workers themselves recognize it or not there is strong reason to believe that a desire of the union leaders to dictate California politics just as they have dictated municipal affairs in San Francisco had much to do with the movement. When it was started some of the leaders in San Francisco boasted, more or less openly, that it would be a final step in their scheme to elect a labor union governor and legislature, and to gain in Los Angeles and the south the same power they have had for years in San Francisco and the north.

The political scheme has not yet materialized, and maybe it will and maybe it will not, but for the last ten or twelve years, up to eighteen months or so ago,



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the oil workers were by far the largest body of workmen in California remaining wholly without organization and entirely outside the pale of union influence. Several previous attempts at organization had failed.

War Chemical Work Of U. S. Bureau Of Mines

PITTSBURGH, Dec. 30.—As an example of the extensive chemical examinations conducted by the United States Bureau of Mines during the period of the war, the work of the Washington and Pittsburgh laboratories are given.

The routine work of the chemical section at the Pittsburgh experiment station consisted largely of inspecting fuel oil purchased for the War Department. In this work 275 samples were analyzed. These samples represented deliveries amounting to nearly 20,000,000 gallons of fuel oil, worth approximately $800,000. About sixty samples of crude oil were analyzed, most of them at the request of the United States Geological Survey. Some sixty samples of lubricating oil were tested, also 135 samples of gasoline, many of these latter being in connection with an investigation of fuel for airplane motors. About ninety-five miscellaneous products were tested, including products of special cracking processes, alleged gasoline improvers, gun greases, and coal-tar derivatives.

The routine work of the Washington laboratory consisted in analyzing 260 samples of gasoline—submitted by various government establishments and bureaus, including the Federal Trade Commission, Signal Corps, Quartermaster Corps, and the Panama Canal Commission—and a number of alleged gasoline improvers and gasoline substitutes. In conjunction with the War College tests were made of the Dunn trench heater.

In addition Mr. Perdew held frequent conferences regarding satisfactory specifications for airplane and motor fuels with members of different government agencies.

Losses from oil and gas fires in the United States for the 10-year period, January 1, 1908, to January 1, 1918, amounted to approximately $25,254,000, and these fires consumed 12,850,000 barrels of oil and 5,024,506,000 cubic feet of gas. Investigations have been conducted by the Bureau of Mines under the direction of C. P. Bowie in an effort to determine the causes of these fires, suggesting means whereby they might be more successfully combated, and, in many places, perhaps eliminated entirely. A report on the investigations, to be published as Bulletin 170, "Extinguishing and Preventing Oil and Gas Fires," is in press. This bulletin discusses the various methods now in successful use for overcoming such fires, and lays especial stress on the "frothy-mixture" system for extinguishing oil-tank fires. Several methods that have been successfully used for fires at large oil and gas wells are also described, and numerous suggestions, many of which are in advance of general practice, are offered for preventing fires in the future.

The American Society for Testing Materials has just issued its book of standards for 1918. These standards are published in book form, triennially.

Was Tutor To Teagle In Old Oil Refinery

CLEVELAND, O., Dec. 26.—A look into the past of half a century ago, when the American petroleum industry was in its infancy, when tank cars and pipe lines were unknown, when gasoline was allowed to run to waste as worthless and when the use of fuel oil to generate steam was unheard of, is afforded by William Roper, of Cleveland, one of the first few men in the country to learn the art of refining and treating oil.

Mr. Roper believes he was the first man in the country to turn out water white kerosene with 150 fire test. Burning oil, previous to that time, had been dark to light straw color, of 110 fire test.

Incidentally, while foreman at the old oil works of Schofield, Shurmer & Teagle, in Cleveland, which later sold out to the Standard Oil Company, Mr. Roper had as his helper Walter C. Teagle, the son of one of the partners in the firm and now president of the Standard Oil Company of New Jersey.

Young Mr. Teagle at that time had just finished college where he had studied the chemistry of petroleum, but it was under the direction of the veteran foreman that the young man got his first training in the practical end of the business.

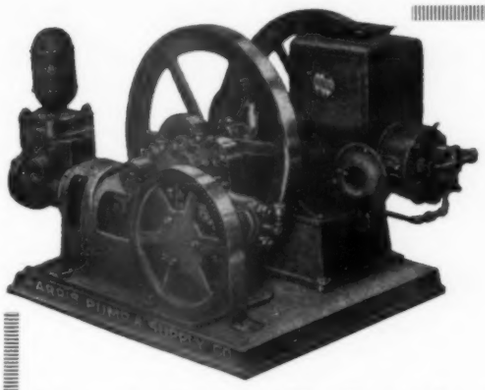
Mr. Roper began his work in the oil business in 1868 or 1869, one or two years after the discovery of oil by Col. Drake on Oil Creek in Pennsylvania. Very little was known then about the refining of petroleum. He went to work at a plant called the Crocker Oil Works, which had four thirty-barrel stills.

Kerosene was the only staple petroleum product then in demand, except lubricating oils, and the efforts of the refiners were bent chiefly upon turning out a better grade of burning oil than their competitors. Mr. Roper's duties were to tend the stills and treat the oil. Knowing nothing of chemistry, he worked out by countless experiments the proper methods of using sulphuric acid, litharge, caustic soda and other chemicals to clarify and refine the oil.

From the Crocker plant Mr. Roper went to the larger works of Alexander & Schofield, in Cleveland. Here he kept on with his experiments and became known as a skilled treater of oils. It was while employed at this plant that young John D. Rockefeller began to come into the limelight. One plant after another sold out to the firm headed by Rockefeller, which later became the Standard Oil Company.

Apprehension among the small refiners was already growing keen as the power and influence of the Rockefeller combination grew more and more potent. The Cleveland refineries at that time received their crude in barrels from the new Pennsylvania oil fields and the only available railroad to transport the crude was known as the Mahoning railroad.

As the Rockefeller expansion program progressed and one Independent concern after another was absorbed, it became common talk in oil circles that the president of the Mahoning railroad had been taken into the Standard Company and owned a large block of stock. The inference was that those Independent oil companies that held out against the blandishments of the Standard would presently find themselves unable to get crude, as the road would refuse to haul the oil to any but Standard plants.



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The outlook appeared dark for Alexander & Schofield, and they sold out, not directly to the Rockefeller interests, but to an organization known as the Southern Improvement Company, thought to be allied with Rockefeller.

W. T. Schofield, one of the partners in Alexander & Schofield, however, immediately formed the oil concern of Schofield, Squire & Teagle. When Alexander & Schofield sold out their business, Mr. Roper remained with the Standard for about a year.

It was while he was working for the Standard that he was approached by Sam Andrews, one of Mr. Rockefeller's early partners, who asked him to try to make a batch of water white kerosene of high fire test. Mr. Roper made the attempt, taking out more of the light ends of the crude and less of the heavy ends and achieved the desired result. This, he believes, is the first time this product had been turned out in the country.

Mr. Roper's service with the Standard lasted only about a year, after which he went to work for the new firm of Schofield, Squire & Teagle, which later became Schofield, Shurmer & Teagle. He helped to clear the ground for the new refinery, which was located in the woods.

The plant started with eight fifty-barrel stills. All of them heated by fire direct, the use of the steam still being a later development. The sole products of the refinery were kerosene, lubricating oils and paraffin, which was made into candles at a shop which was part of the refinery plant.

Efforts were made from time to time to find some use for the gasoline which went to waste. Among these were attempts to make a compound of it for use as painter's oil instead of turpentine, but these experiments had but little success.

Trains Walter Teagle

While he was working at this plant, John Teagle, one of the partners, asked Mr. Roper if he would allow Teagle's son, Walter, to work with him as a helper to learn the practical side of refining. Young Teagle had acquired the book and laboratory end in school but had had no practical experience.

All the men versed in oil treating at that time, who were comparatively few, guarded their knowledge as a secret. Therefore it was no small favor on Roper's part when he consented to teach the young man what he knew of the business. Young Teagle worked with Roper for about a month, that being his first step on the ladder that has carried him to the presidency of the largest Standard Company.

Mr. Roper was employed by Schofield, Shurmer & Teagle for more than twenty-nine years, during which he saw the oil industry revolutionized. He saw the evolution of the tank car from the days when crude was shipped in wooden barrels. The next step in the advance was in the building of flat cars each carrying two big wooden tanks standing on end. Then came the iron tank mounted on trucks and finally the big steel tank car that is in service today.

He saw the pipe line evolved and developed by the ever growing Standard, and most important he saw the kerosene lose its pre-eminent place as the staple petroleum product with the face of the growth of electricity and gas as lighting agents and the dawning demand for gasoline, caused by the growing popularity of the automobile and of gasoline engines for other purposes.

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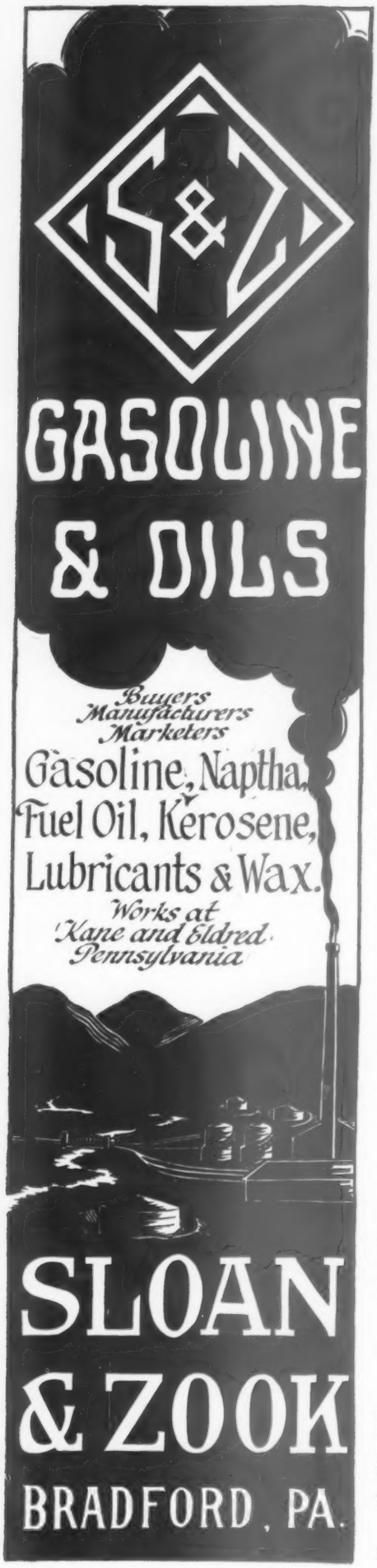

Draw Kerosene Specifications That Can Be Met From Many Crudes

By Special Correspondent.

WASHINGTON, Dec. 27.—The Committee on Standardization of Petroleum Specifications, of which M. L. Requa, director general of the Oil Division of the Fuel Administration is chairman, has drawn up standard specifications for kerosene which are now in effect covering illuminating oil used by all Government departments, including the lighthouse service and the railroads.

In the past, specifications for oil have often been so drawn that only the product of certain crudes in a few parts of the country could meet them. The aim of the committee was to formulate specifications that could be met by the oil refined from any practical crude.

With the use of the standard kerosene obligatory upon the railroads while they are under Government control, it is believed likely that they will adopt the same specifications if they are returned to private operation, as it will save them from buying oil in one part of the country and shipping it to distant parts of their systems.

The statement introducing the specifications follows:

"The specifications for illuminating oils which have been heretofore used by the different departments of the government, including the Railroad Administration, have been, at times, so drawn that they could be met only when the oil was manufactured from the crude from some particular section of the United States, notwithstanding the fact that oils from other districts could produce an illuminating oil equally as desirable.

"The Committee on Standardization of Petroleum Specifications early in its activities recognized that this resulted in increased cost, not only to the government, but to the railroads, when they purchased oils in one part of the country and transported them to another part, when a perfectly satisfactory product could have been obtained much nearer to the point of consumption.

"As a result of this condition, new specifications have been drawn so as to allow these products to be made from any satisfactory crude petroleum, thereby saving not only unnecessary rail transportation, but making the oil available at point of consumption at less cost."

The specifications follow:

Water White Kerosene
Method of Test

Flash

To be taken on the Tag closed cup, A. S. T. M. Standard; oil to be heated at the rate of 2 degrees Fahrenheit per minute; test flame to be applied every 2 degrees, commencing at 105 degrees Fahrenheit.

Color

To be determined on the Saybolt colorimeter or its equivalent.

Sulphur

Test to be made by burning at least 2 grams of the oil in a small flask and absorbing the gases of combustion in a standard solution of sodium carbonate and titrating the excess of sodium carbonate with the standard solution of sulphuric acid.

Floc

Directions for making test:—Take a hemispherical iron dish and place a small layer of sand in the bottom. Take a 500 c.c. Florence or Erlenmeyer flash and into it put 300 c.c. of the oil (after filtering if it contains suspended matter). Suspend thermometer in the oil by means of a cork slotted on the side. Place flask containing the oil in the sand bath and heat bath so that the oil has reached a temperature of 240 degrees Fahrenheit at the end of one hour. Hold oil at temperature of not less than 240 degrees Fahrenheit nor more than 350 degrees Fahrenheit for 6 hours. The oil may become discolored, but there should be no suspended matter formed in the oil. The flask should be given a slight rotary motion, and if there is a trace of "floc" it can be seen to rise from the center of the bottom.

Distillation Test

The oil shall all distill below temperature of 600 degrees Fahrenheit. The test is made as described by the Bureau of Mines, Technical Paper 166, using A. S. T. M. apparatus with wet bulb and total immersion thermometer.

Cloud Test

Directions for making test:—Take a 4-ounce oil sample bottle and introduce therein 1½ ounces of the oil to be tested; insert cork with cold test thermometer so that thermometer is suspended in the oil. Place a bottle in a freezing mixture and cool to 0 degrees Fahrenheit. Keep oil cooled to this temperature for 10 minutes. Bottle should be given a rotary motion occasionally so as not to supercool the sides. The oil should not be clouded from crystals or paraffin wax at the end of 10 minutes.

Reaction

Two ounces of the oil should be shaken with ½ ounce of warm neutral distilled water and allowed to cool and separate. The water when separated shall reach neutral to methyl-orange and phenolphthalein.

Burning Test

The oil must burn freely and steadily in a lamp fitted with a No. 1 sun hinge burner. It must give a good flame for a period of 18 hours without smoking or forming "ears" or "toadstools" on the wick. The chimney must be only slightly clouded or stained at the end of the test.

Summary of Specifications
Water White Kerosene

Appearance

Oil must be free from water, glue and suspended matter.

Flash

Not less than 115 degrees Fahrenheit. Tag closed cup, A. S. T. M. standard.

Color

To be 21 color on Saybolt colorimeter or its equivalent on a Lovibond tintometer, these being equal to color of a solution of potassium bichromate containing 0.0048 grams per liter.

Sulphur

Not more than 0.06 per cent.

Floc

Oil to be free from floc.

Distillation

Oil to distill below temperature of 600 degrees Fahrenheit.

Cloud Test

Oil should not show cloud at 0 degrees Fahrenheit.

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Reaction

Must be neither acid nor alkaline.

Burning Test

As stated above.

Special Notes Covering Kerosene for U. S. Navy

Water white kerosene for United States Navy use, when specifically required for special fuel, shall have a heating value of not less than 20,000 BTU per pound.

When specifically provided for a representative sample of the oil delivered will be tested photometrically after burning for 1 hour in a lamp fitted with a No. 1 sun hinge burner. Five hours later another photometric test will be made to determine any change in intensity of the light; the maximum allowable loss shall be 5 per cent. The flame shall show at least 6 candle-power when compared photometrically with an incandescent lamp which has been standardized by the Bureau of Standards.

Otherwise specifications enumerated above apply for United States Navy kerosene.

Long-Time Burning Oil
Method of Test

Flash

To be taken on the Tag cup, A. S. T. M. standard; oil to be heated at the rate of 2 degrees Fahrenheit per minute; test flame to be applied every 2 degrees, commencing at 105 degrees Fahrenheit.

Color

To be determined on the Saybolt color-immeter or its equivalent.

Floc

Directions for making test:—Take a hemispherical iron dish and place a small layer of sand in the bottom. Take a 500 c.c. Florence or Erlenmeyer flash and into it put 300 c.c. of the oil (after filtering if it contains suspended matter). Suspend thermometer in the oil by means of a cork slotted on the side. Place flask containing the oil in the sand bath and heat bath so that the oil has reached a temperature of 240 degrees Fahrenheit at the end of one hour. Hold oil at temperature of not less than 240 degrees Fahrenheit nor more than 350 degrees Fahrenheit for 6 hours. The oil may become discolored, but there should be no suspended matter formed in the oil. The flask should be given a slight rotary motion, and if there is a trace of "floc" it can be seen to rise from the center of the bottom.

Cloud Test

Directions for making test:—Take a 4-ounce oil sample bottle and introduce therein 1½ ounces of the oil to be tested; insert cork with cold test thermometer so that thermometer is suspended in the oil. Place a bottle in a freezing mixture and cool to 0 degrees Fahrenheit. Keep oil cooled to this temperature for 10 minutes. Bottle should be given a rotary motion occasionally so as not to supercool the sides. The oil should not be clouded from crystals or paraffin wax at the end of 10 minutes.

Reaction

Two ounces of the oil should be shaken with ½ ounce of warm neutral distilled water and allowed to cool and separate. The water when separated shall react neutral to methyl-orange and phenolphthalein.

Burning Test

Burning test will be made by introducing 25 fluid ounces of oil into the pot of a standard Railway Signal Association semaphore lamp, fitted with the purchas-

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Dec. 31, 1918

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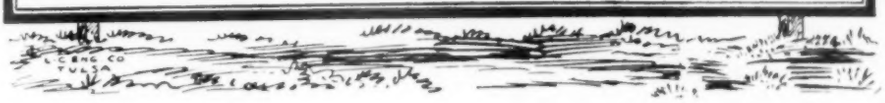

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er's standard burner, chimney and wick. The wick shall be new and previously washed with redistilled ether and dried at room temperature; the lamp to be protected from the direct rays of the sun, but may be burned either outdoor or in a well-ventilated room. During the first hour of the test the wick will be adjusted so as to produce a flame 7/8 inch high, measured from the top of the wick. The lamp shall burn continuously without readjusting the wick for 120 hours or until all of the oil is consumed.

The flame shall remain symmetrical and free from smoke thruout the test period.

The height of flame at any time during the test shall be not less than three-quarters of an inch. The oil shall not produce any appreciable hard incrustation on the wick.

Summary of Specifications Long-Time Burning Oil

Appearance

Oil must be free from water, glue and suspended matter.

Flash

Not less than 115 degrees Fahrenheit, Tag closed cup, A. S. T. M. standard.

Color

Twenty-one color on Saybolt Cororimeter or its equivalent on a Lovibond tintometer, these being equal to color of a solution of potassium bichromate containing .0048 grams per liter.

Floc

Oil to be free from "floc."

Cloud Test

Oil should not show cloud at zero degrees Fahrenheit. See note No. 1 below.

Reaction

Must be neither acid nor alkaline.

Burning Test

As stated above.

Note No. 1. Relative to cloud test:—Temperature of zero degrees Fahrenheit can be varied either up or down to suit the climatic conditions in the territory in which the oil is to be used.

Special Notes Covering Long-Time Burning Oil

Bureau of Light Houses

Oil for use by the Bureau of Light Houses shall be as described by the Department of Commerce, which specifications, etc., at the present time are as follows:

(1) The kerosene must have a flash point of not less than 140 degrees Fahrenheit and fire point of not less than 160 degrees Fahrenheit (Tagliabue closed tester).

(2) The kerosene must contain no free acids or mineral salts. Litmus paper immersed in it for five hours must remain unchanged.

(3) One hundred grams of kerosene shaken with 40 grams of sulphuric acid (Sp. Gr. 1.73) must show little or no coloration.

(4) When distilled from a still, so jacketed as not to allow of local heating at a rate of not over 10 per cent in ten minutes, the kerosene shall not distill below 350 degrees Fahrenheit and 98 per cent shall distill under 515 degrees Fahrenheit—the temperature taken being that of the condensing vapor.

(5) When burned for 120 hours in a lens lantern supplied with a 5th order oil lamp, the kerosene must burn steadily and clearly without smoking, with minimum incrustation of wick, slight dis-

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coloration of chimney and less than 10 per cent loss of candle-power. A lamp of this description will be loaned to successful bidder.

300-Degree Mineral Seal Oil Methods of Test

Flash

To be taken on the Cleveland open cup; oil to be heated at the rate of 7 degrees Fahrenheit per minute; test flame to be applied every 5 degrees, commencing at 210 degrees Fahrenheit.

Fire Test

After the flash point is obtained the oil shall be heated at the same rate (7 degrees per minute), test flame to be applied every 5 degrees after the flash point has been obtained.

Color

To be determined on the Saybolt colorimeter or its equivalent.

Floc

Directions for making test:—Take 500 c.c. Florence or Erlenmeyer flask and into it put 300 c.c. of oil (after filtering if it contains suspended matter). Oil to be heated at the rate of 10 degrees Fahrenheit per minute to a temperature of 450 degrees Fahrenheit and held at that temperature for fifteen minutes. The oil shall show no floc or precipitate at that temperature or one hour after cooling.

Cloud Test

Directions for making the test:—Take a 4-ounce oil sample bottle. Introduce therein 1½ ounces of oil to be tested. Insert cork with cold test thermometer so that bulb is slightly below the surface of the oil. Place bottle in a freezing mixture and cool oil to a temperature of 32 degrees Fahrenheit. Keep oil cooled to this temperature for ten minutes. Bottle should be given a rotary motion occasionally so as not to supercool the sides. The oil should not become cloudy from crystals of paraffin wax at the end of ten minutes.

Reaction

Two ounces of the oil should be shaken with one-half ounce of warm neutral distilled water and allowed to cool and separate. Water when separated shall react neutral to methyl-orange and phenolphtalein.

Burning Test

Burning test will be made by introducing 20 fluid ounces of oil into a lamp fitted with a dual burner No. 3, dual chimney and duplex wicks. The lamp used shall be such that the distance from the top of the wick tube to the bottom of the inside of the font is not less than 6½ inches nor more than 7 inches. During the first hour of the test the wicks will be adjusted so as to produce a symmetrical flame approximately one inch high, measured from the top of the wicks. The lamp shall burn continuously without readjusting until all of the oil is consumed.

The flame shall remain symmetrical and free from smoke throughout the test period. The oil shall not produce any appreciable hard incrustation on the wick.

Summary of Specifications, 300-Degree Mineral Seal Oil

Appearance

The oil must be free from water, glue and suspended matter.

Flash

Not less than 250 degrees F. Cleveland open cup.

Fire

Not less than 300 degrees F. Cleveland open cup.

"Western Petroleum" Trade Bulletin

Form 1201

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Day Letter	Blue
Night Message	Nite
Night Letter	N L

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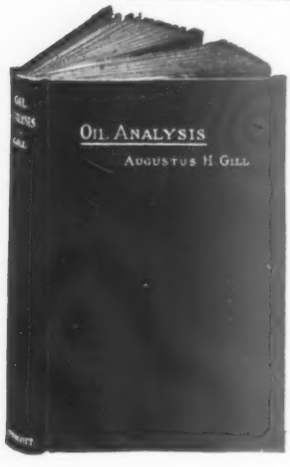

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The National Petroleum News
Caxton Building Cleveland, Ohio

Color

To be not less than 16 color on Saybolt colorimeter or its equivalent on the Lovibond tintometer, these being equal to color of a solution of potassium containing 0.012 grams per liter.

Floc

Oil to be free from "floc."

Cloud Test

Oil should not show cloud at 32 degrees F.

Reaction

Must be neither acid nor alkaline.

Burning Test

As stated above.

Signal Oil
Methods of Test
Flash

To be taken on the Cleveland open cup. Oil to be heated at the rate of 7 degrees F. per minute and test flame to be applied every 5 degrees, commencing at 210 degrees F.

Fire Test

After the flash point is obtained the oil shall be heated at the same rate (7 degrees per minute). Test flame to be applied every 5 degrees after flash point has been obtained.

Cloud Test

Directions for making test: Take a 4-ounce oil sample bottle and introduce therein 1½ ounces of oil to be tested. Insert cork with cold test thermometer so that bulb is slightly below the surface of the oil. Place the oil in a freezing mixture and cool to 32 degrees F. Keep oil cooled to this temperature for ten minutes. Bottle should be given a rotary motion occasionally so as not to supercool the sides. The oil should not become cloudy at the end of ten minutes from crystals of paraffin wax or solid fats from the lard oil or sperm oil.

Burning Test

This test is to be made in a standard railway signal hand lantern, the burner of which is fitted with a 1-inch wick. The oil to be burned twenty-four hours without trimming or adjusting the wick, the pot of the lantern to be refilled if too small for a test of the duration named.

Oil must preduce a satisfactory flame throughout the test period.

The oil must not produce an appreciable amount of hard incrustation on the wick.

The flame must stand all forms of railroad signaling in any kind of weather without being extinguished or smoking the globe.

Summary of Specifications
Signal Oil
Appearance

The oil must be free from water, glue and suspended matter.

Composition

To be 300-degree mineral seal oil as adopted by the Committee on Standardization of Petroleum Specifications, compounded with pure prime winter strained lard oil and sperm oil.

Flash

Not less than 250 degrees F. Cleveland open cup.

Fire

Not less than 300 degrees F. Cleveland open cup.

Cloud Test

Oil should not show cloud at 32 degrees F.

Percentage of Fatty Oil

"A" grade must contain not less than 30 per cent of fatty oil by volume.

"B" grade must contain not less than 22 per cent of fatty oil by volume.

The "A" grade shall always be furnished unless "B" grade is specifically ordered.

Free Fatty Acids

"A" grade must contain not over 0.60 per cent free fatty acid calculated as oleic acid.

"B" grade must contain not over 0.45 per cent free fatty acid calculated as oleic acid.

Gravity

It will be noted that there are no gravity specifications for any of the products mentioned above. It has been known for a number of years that the gravity of an oil, by itself, has no relation to the quality. Two oils may have exactly the same gravity and one might be an excellent oil, while the other would be absolutely worthless. This difference in quality is due to the crude from which it has been made. Therefore, no gravity was specified and the quality was left to be determined by other specifications.

Flash

The Tag closed cup, A. S. T. M. standard, was adopted because it has been accepted by several societies and its measurements have been standardized.

Color

The Saybolt colorimeter was adopted because most of the kerosene manufactured in this country is tested by this machine. We have also shown the relation between the standard color for water white oil and the solution of potassium bichromate, as well as the relation between the standard color of 300-degree mineral seal and potassium bichromate. This will enable the manufacturer who has no color machine to make up a standard solution of potassium bichromate and use this solution for comparison.

Sulphur

No standard limit was placed on long-time burning oil or 300-degree mineral seal, because these oils are generally burned out of doors, or where there is a good circulation of air.

Wyoming Production 45,800 Barrels A Day

CASPER, WYO., Dec. 27.—Wyoming marketed production is holding steady at 45,800 barrels daily and there remains shut in 6,800 barrels. As against a total of 859 producing wells, there are 185 tests drilling and 101 rigs or locations. Montana has seventeen tests drilling and seven rigs for locations.

Winter weather has had its effect upon operations in the northwest, but a number of showings for small wells are reported over the last ten days. In Sect. 21-43-92 Ohio Oil Company's No. 1 Placer got the top of a stray sand in the frontier formation at 382 feet, making 35 barrels daily at six feet into the pay.

Number 2, which had the sand from 690 to 720 feet and was drilled to a total depth of 860 feet, is showing for fifteen barrels.

In Hot Springs county, the Yellowstone-Wyoming Oil Company's No. 1 Placer is shut down at 1,200 feet with ninety feet of oil in the hole in Sect. 12-45-97.

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DALLAS, TEXAS

Gasometer Saves Gas From Gasoline Tanks

LOS ANGELES, CAL., Dec. 27. — A gasometer, similar to those in use in artificial gas plants, has been installed by the Shell Oil Company, of California, to collect the light gases escaping from gasoline storage tanks. Instead of only partly filling the gasoline tanks and leaving room at the top for expansion, the tanks are completely filled.

The gasometer is connected to the battery of tanks.

Its purpose is to take care of the expansion and contraction, owing to changes in

Gasometer used by Shell Company

temperature, of the light gases filling the space between the surface of the gasoline and the tops of the tanks. If one tank in the battery is being filled while another is being emptied, the function of the gasometer is also to conserve the gases discharged from the tank being filled. Such gases ordinarily escape into the atmosphere, but the gasometer causes them to be returned to a tank being emptied.

According to a report of the Bureau of Mines on the gasometer plan, there seems no reason why such a system could not be applied to run-down tanks, and the like, a provision being made whereby any surplus gases not taken care of by the gasometer could be drawn off and condensed, or otherwise profitably disposed of.

Attempts to cultivate castor oil on a large scale are now being made in the south of Spain. The first experimental sowings, made in the province of Malaga, have given very satisfactory and profitable results, and it is now intended to form a large joint-stock company, with considerable capital, in order to develop the new industry to the utmost.

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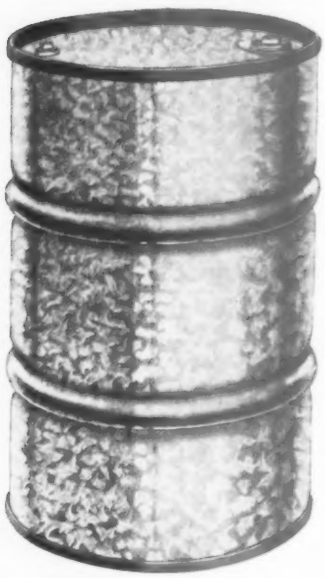

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LUBRICATING AND INDUSTRIAL OIL ENGINEERING

By JOHN ROME BATTLE
Associate Member American Society Mechanical Engineers

Woolen Mill Operations Described For Instruction Of Oil Salesmen

A GENERAL description of the properties of wool and the general methods of working it will be given in the following article to supplement the description of the working up of cotton, which was described in a previous article.

The fibres of the best wool are made up of a series of elongated cells, which taper toward the end. These cells are covered by the "epidermis" as it is called, or the outer surface. These cells and their covering consist of a series of scales that range in size from about .0003 to 0.001 of an inch in diameter.

This wavy, scaly nature of the wool has a relation to the felting and matting properties, and if two fibres of wool are rubbed together, the scales of their outer surfaces are raised, and hook onto each other, thus locking the fibres.

Chemically speaking, wool is made up of carbon, nitrogen, hydrogen, sulphur, oxygen and other mineral substances. Authorities state that about 50 per cent of the wool fibre is composed of carbon and 3 per cent of sulphur. In fact, these authorities state that probably some of the trouble met with in dyeing wool, is due to the sulphur content, which may form complex sulphur compounds, and this fact should be borne in mind when adjusting complaints in connection with wool oil and the dyeing operation.

Diseased Fibres Hard to Dye

Another feature which should be borne in mind in connection with the dyeing of wool is that the wool may have been taken from sheep that have died, thus containing diseased fibres, which do not dye well, because the dye is said not to penetrate the fibres satisfactorily.

Weak acids have little or no effect upon wool and this feature is made use of in testing mixtures of wool and cotton, the cotton being carbonized by treatment with sulphuric acid and heating to about 230 degrees Fahr.

Caustic alkalies have a bad effect upon wool, and for that reason oils or soaps which contain an excess of these should be avoided, as they will attack the fibres during the scouring, resulting in "rotten goods." This condition is often met with in badly made textile soaps and is blamed unjustly upon the wool oil.

In the manufacture of raw wool into yarn there are two general processes, namely, the "worsted system" and the "woolen system." In the worsted system, the long staple wool only is worked, while in the woolen system, the short staple fibres also are used. In explaining the essential difference between the two systems, it can be further explained that in the worsted system, the fibres are made to lie parallel to each other, and are made from combed wool, from which the short fibres have been removed. The short fibres being known as "noils" and the other as "tops." Woolen yarns, on the other hand, are made from fibres which lie in all direction and are matted and intermixed.

The raw wool may be "fleece wool," "nulled wool," or "lambs' wool." "Pulled wool" is the wool pulled from the pelts of the sheep after having been lime treated, thus, naturally, this wool is left harsh in texture and generally contains a certain amount of lime, its condition depending largely upon the care exercised by the puller. "Fleece wool" is the wool as sheared from the sheep, and contains all of its natural ingredients, which will be described later. "Lambs' wool" is that obtained from the first shearing of the sheep. Wools from different countries, and from different breeds of sheep vary and do not all possess the same value for manufacturing purposes.

How Wool is Treated

The wool is first generally sorted into different grades and staple as may be desired, according to the uses to which it is intended to be put, and after it has been sorted it is scoured, in order to remove the grease and yolk. It must be understood that the wool on a sheep's back is very greasy and dirty, and thus before it can be spun or woven into yarn, it is necessary to remove this dirt and grease.

This is accomplished by treating the wool in washing liquors, which usually contain soda and soap. The practice of various wool scourers, however, varies very much, some using only alkalies and others using only soap, while others use both.

The best soap for scouring wool is one that is neutral and does not contain free caustic alkali or unsaponified fat. It should also not contain free rosin, mineral oil, or other unsaponifiable bodies. If the soap contains a great excess of free alkali it will act injuriously upon the wool, destroying the surface, raising the scales and impairing the lustre.

Analysis of Wool

Raw wool itself usually contains naturally some soap. An analysis of a raw wool may have the following results:

Soap matter	21 per cent
Water	24 per cent
Wool fat	10 per cent
Dirt	3 per cent
Fibre (wool)	42 per cent

The soap matter referred to is soluble in water and is called yolk, or suint. The wool fat is largely capable of mechanically combining with water, forming lanoline.

The washing or scouring is usually done by passing the wool, by means of automatic rakes, thru a washing machine. This machine has three or four bowls, which contain the cleansing solution. Each bowl has a set of rollers, which are intended to squeeze the water and solution from the wool before it passes to the next bowl, and after having passed thru the last bowl and its set of rollers, the wool is carried out on an apron of slats to the drying chamber, where the moisture is taken out, to a great extent.

The next step is to deliver the wool to the cards. The scouring operation is very important and requires great care. The stock must be freed from grease, without its being made harsh or burnt, by too strong a solution.

On the other hand, too weak a solution will leave the wool greasy and gummy. In the worsted system, if the wool is scoured too hard, the fibres become brittle and are broken easily, which will cause more "noil," while if not scoured correctly, so as to be left ggreasy, the stock will roll upon the wire of the cards, and then when combing out these "nibs," as they are called, we have more "noil."

Salesman Must Know Process

All this must be understood by a successful oil salesman for use in sizing up the mill conditions and selecting the proper kind of wool oil or other products which he has to offer.

Usually in the worsted system, only water is used to condition the stock, before carding, altho some mills use an oil which will make an emulsion. The reason for this is that the application of oil causes the stock to become sticky and gummy, causing it to roll up on the cards, producing noils and making the fibres of the wool lie irregularly, so that it would be hard to get a good worsted yarn.

In the woolen system, however, these factors are not important, as before explained, the fibres lying in a matted condition.

Generally, most mills that do worsted carding do their own scouring and deliver the stock direct to their cards, with the proper amount of moisture in it. Thus, only in cases where the air dries up the moisture in the wool, is anything applied to it, as it is preferable to have the stock direct from the dryer, thus obtaining a more uniform stock, without continually changing the feed, which would be necessary where the material was not running uniform in moisture content.

There is another process for removing the grease from the wool, by means of naphtha, without the use of soap and water. Some spinners claim that "tops" made from wool that is de-greased in this manner, are softer in feel and more easily spun, than in the case with "tops" made from the same grade of wool that has been scoured with the other method, using soaps. Some textile soaps that are on the market are supposed to contain naphtha in combination with their other ingredients.

MILWAUKEE TANK WORKS—OIL AND GASOLINE OUTFITS

TYPE 38
Master Electric Filling Station

Pump is of the Plunger Type—No Rotary Pump or Flow Meter being used. Can be sealed by any Inspector exactly like a Hand Pump. The Pointer on Large Dial is set to Zero, and Lever is pressed to start pumping. More pressure on Lever, more speed; maximum 18 gallons per minute. Operating Cabinet Door is provided with Lock. Gallon recording Meter is inside, under lock and key. All parts very simple and durable, nothing to get out of order. Weight 575 lbs. without Tank.

Regular equipment includes Meter, Filter, 10′ Flexible Metal Hose with Portable Nozzle, Illuminated Electric Sign. Any 110 volt current may be used, as Motor is only half horse power. About 15c worth of current will pump a thousand gallons. Pump can be operated successfully by a 12 year old child.

The tank is of Heavy Galvanized Steel, provided with usual fixtures and fittings, and bears the Underwriter's Label.

TYPE 38

Master Electric Filling Station. Tank 12-Gauge, buried underground.

With 280 Gallon Tank.....Code, Masterful
With 550 Gallon Tank.....Code, Masterly
With 820 Gallon Tank.....Code, Masterpiece
With 1075 Gallon Tank.....Code, Mastership
Master Electric without Tank.....Code, Master
F. O. B. Milwaukee.

TYPE 36
5 Gallon Rapidelivery Filling Station

The Peer of all Five Gallon Pumps. Twelve turns of the crank discharges five gallons; then two turns, still forward (no backward turns at all) and plunger is quick returned for next five gallons. Measuring Stops may be set for one, two, three, four or five gallons. Equipped with large Filter, Total Recording Meter, 10′ Flexible Metal Hose 1¼″ size and Portable Nozzle. Cover when raised, encloses working parts, and is locked, with Hose Nozzle inside.

The easiest working, highest class Hand Pump built.

Tank of Heavy Galvanized Steel provided with usual fittings and fixtures, and bears the Underwriter's Label.

TYPE 36

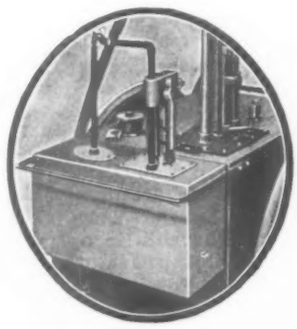
RAPIDELIVERY Five-Gallon Continuous Motion Speed Pump with Underground Tank; 12-Gauge Steel.

280 Gals.....Code, Penal
550 Gals.....Code, Poll
820 Gals.....Code, Pock
1075 Gals.....Code, Post
Pump alone, without Tank.....Code, Pouch
Electrically Illuminated Dome Sign.....Code, Probe
F. O. B. Milwaukee.

TYPE 22
Portable Gasoline Wheel Tank

Capacity 50 Gallons.

Built of heavy steel, with large Rubber Tired Steel Wheels, Brake, to prevent rolling, dial measuring gauge, automatic vent valve, locked fill cap, and pump which measures gallon, half-gallon and quart. 10 ft. flexible metal hose included. Meter if desired extra. Lubricating Oil ten gallon Tank with quart measuring Pump if desired, additional. Price F. O. B. Milwaukee, Code, Tab.



TYPE 22-L
Portable Lubricating Oil Wheel Tank

Built exactly the same as the Type 22, except that the Pump is adjustable for measuring quart, pint and half-pint, and especially adapted for Lubricating Oil. Capacity 50 gallons. Price F. O. B. Milwaukee. Code, Table.

TYPE 22-D
Duplex Lubricating Oil Portable Wheel Tank

Built exactly like Type 22, except that Tank is divided into two compartments, each holding 25 gallons. Each compartment is fitted with a separate quart self-measuring Pump. Each compartment has its Measuring Gauge, Automatic Vent Valve, and Locked Fill Cap. Price F. O. B. Milwaukee. Code, Tack.

REFINERY, TANK WAGON MARKETS

Pa. Refiners To Continue Crude Plan

THE eastern refiners believe the crude stabilization plan as it affected eastern crudes has benefited them materially, and they have practically decided to continue it until March 1st by voluntary agreement among themselves, their purpose being to prevent a bidding up of premiums on these grades which would almost certainly bring disfavor in the eyes of Oil Director Requa.

Must Have More Crude

The refiners in this district are faced with a situation wherein their supply of crude is constantly falling off as the production of the eastern fields declines. Their allotment from the South Penn Oil Company cannot be increased further. The situation is one that would bring an advancing market unless some such means as this were taken to prevent it. To give them a new supply of crude and one similar to what they are now using, the eastern Independent refiners purpose buying in Kentucky and moving the stuff to their plants in their own tank cars.

Refined Market Still Soft

The removal of the crude restrictions by Oil Director Requa has not yet affected the crude or refined markets. The latter as a rule are still weak, no particular declines in prices being made the last week, however. No further changes have taken place in the tank wagon markets.

Scarcity Of Ships Holds Up Gasoline Exports

Mid-Continent Bureau,
TULSA, Dec. 28.

Refiners are looking forward toward a readjustment of conditions within the 60 days to follow the opening of the new year. Meantime, there is slight demand for their products because of the weather and because of a scarcity of ocean-going bottoms for transport of their output abroad.

With weather such that natural gas still is being used in the east for fuel, where available, that condition has been a factor in lessened demand. The bigger consumers are said here to have their storage crowded, and there will not be the big demand for fuel that had been anticipated a month or two ago. Some of the eastern manufacturers are asking for cancellation of their contracts or a reduction in shipment on these contracts, giving in turn as their reason the cancellation by the government of its contracts.

Refiners admit that they "do not expect the fuel market we have had," this, of course, depending upon the price of crude oil. If the credit balance price for crude should go up, they point out, it would be necessary for them to get more for their fuel. These same refiners point out that the chances are that fuel oil will go back in the course of the time required for readjustment to a basis of about 75 per cent of the crude price, or a little higher, this depending, of course, upon destination of the shipment.

There is no doubt expressed that gasoline will be in big demand for export when tankers have been made available. This is true also of kerosene. There are very small kerosene stocks on the Atlantic seaboard, and it is said that of the few tankers so far made available some of them intended as kerosene carriers have been diverted from the eastern coast to Gulf of Mexico ports.

Kerosene is holding up well in domestic markets, as against practically unchanged conditions governing gasoline over a two or three weeks' period, in which the general tendency of the latter has been toward softening.

Demand for lubricating stocks is off, in common with the usual situation at this time of the year and responsive to the weakening in all products, altho it is pointed out that these grades have held up proportionately better than the lighter refinery products.

Franklin Crude Is Advanced $1 Per Bbl.

PITTSBURGH, Dec. 30.—For the first time in forty years an increase was made in the price of Franklin heavy first sand oil when the price was raised last week from $4 to $5 a barrel. The Foco Oil Company, Franklin, Pa., which announced the advance, secured the necessary permission from the fuel administration after an earlier request had been refused. This company controls the bulk of production of this grade of oil. In the earlier days of the war when Pennsylvania crude oil fell from $2.50 to $1.30 a barrel, Franklin heavy oil remained at $4.

Franklin heavy crude oil is essentially a lubricating oil and can be used in its natural state for lubricating gas engines.

Fuel Oil Still Soft At Penna. Refineries

By Special Correspondent

PITTSBURGH, Dec. 31.—The gasoline and fuel oil market continues soft at the Pennsylvania refineries despite the last two or three days of colder weather. There is not much demand for kerosene and about the only strong feature of the market at present is cylinder stocks, which made small advances in prices the past week on the strength of buying for the export trade.

Fuel oil is selling at no higher than eight cents as far as can be determined and offerings at this figure do not bring a flood of buyers into the market. It is generally believed that a continuation of the weather conditions of the past few days, with perhaps a further drop in the temperature, will stiffen the market for this product, or at least will check any further tendency towards a decline.

The gasoline market, if anything, is weaker, but this is to be expected at this season of the year, and it is not believed the present market on this product is relatively as weak as it is normally at this particular time of the year. The lower grades of naphthas are bringing about the same prices, but some of the higher gravity gasolines are off a quarter cent a gallon.

The absence of any purchasing to any extent of kerosene has brought up the question as to the extent to which the jobbers are stocked with this product. A month ago there was a fair demand for kerosene. This normally should increase as the weather becomes colder. It is believed the jobbers are carrying good stocks in case zero weather such as we experienced last year brings an abnormal demand. Prices are unchanged over a week ago.

There is practically no demand either for neutral oils, and buyers seem to be holding off for even lower prices. This is about the time of year when activity develops in this product thru purchasing to manufacture motor oils. It is anticipated present prices will strengthen in the near future.

The market on wax seems stronger altho there is not a heavy export movement of this product. In fact the export movement in oil products generally is light at present, except for allocated shipments, and the assumption is that tonnage is being used to move food products wherever it can be spared from the general carrying trade.

PITTSBURGH, Dec. 30. — A convention committee has been appointed by the National Gas Association, and plans for the 1919 gathering may be worked out in the near future. The convention committee includes R. W. Gallagher, of the East Ohio Gas Company; H. G. Hoover, of Ohio, and David O. Holbrook, of Pittsburgh, secretary of the association.

"TRIPLEXD"
GASOLINE HOSE

A very flexible metal hose, with compressed rubber casing held under tensile pressure in a woven fabric cover.

Send to Dept. D-4 and get description and prices

METAL HOSE & TUBING CO.
INCORPORATED
RAYMOND & TILLARY STS.,
BROOKLYN, N.Y.

Superior
Oil Works
Warren, Pa.

Superior Quality
Gasoline and
Illuminating Oils
Mineral Colza
Fuel Oil
600 Fire Test
Filtered
Cylinder Stock

Mutual
Refining Co.
Warren, Pa.

Refinery Markets, All Products

Following are the average market prices on the more important petroleum products in cents per gallon f. o. b. refinery in both Oklahoma and Pennsylvania. These are actual prices at which the bulk of each product is moving from the refineries at the present time. Anyone having knowledge of different prices which have obtained on any considerable quantity of any of the products mentioned will greatly favor us by advising us at once.

Prices effective Dec. 31.

GASOLINE AND NAPHTHAS	Prices Dec. 31
Pennsylvania	
54 Naphtha	19
58 Naphtha	20½
60 Straight-run gasoline	21-21¼
62 Straight-run gasoline	21¼-22
64 Straight-run gasoline	24
68 Straight-run gasoline	26¾- 27
60 Blend	21⅛
64 Blend	22¾
68 Blend	23
Oklahoma	
50-52, 450 end point	15¾-15⅞
52-54, 450 end point	15⅞-15¾
54-55, 450 end point	16-16¼
56-57, 450 end point	17-17¼
58-59, 420 end point	17¾-18
60-61, 400 end point	19-19¼
62-63, 365 end point	21½-22
80-84 Raw Casinghead	24
68-70 Blend	21¾-22¼
66-68 Blend	21
60-62 Blend	18-18¼
58-60 Blend	17-17¼

BURNING OILS	
Pennsylvania	
47 Water White	9¾-10
48 Water White	10¾-11
300 Burning Oil	11½-11¾
Oklahoma	
42-43	7¼-7½
44-46	9¼-9¾
42-43 Distillate	6¾-7
NEUTRAL OILS	
Pennsylvania	
200 Vis. No. 3 Assoc. Filt	26-26½
180 Vis. No. 3 Assoc. Filt	24-24½
150 Vis. No. 3 Assoc. Filt	21½-22
Oklahoma	
100 Vis. No. 2 Color	11½-12
200 Vis. No. 3 Color	21¾
160 Vis. No. 4 Color	18¾
200 Vis. No. 4 Color	19¾-20
200 Vis. No. 5 Color	17½-17¾
CYLINDER STOCKS	
Pennsylvania	
600 Steam Refined	20¾-20½
650 Steam Refined	22-22½
635 Steam Refined	21-21½
600 Flash	23-23¾
600 Amber Filtered	29
600 Medium Filtered	39
WAX	
Pennsylvania	
122-124 White Crude Scale Wax, N. Y., lb.	9½
124-126 White Crude Scale Wax, N. Y., lb.	.9½-9¾
Oklahoma	
122-124 White Crude Scale Wax	9
FUEL OIL	
Pennsylvania	
38-40 Fuel Oil	7¾-8
40-42 Fuel Oil	8
Oklahoma	
24-26 Fuel Oil, per bbl., Cleveland delivery	$2.00
28-30 Fuel Oil, per bbl., Cleveland delivery	$2.10
30-32 Fuel Oil, per bbl., Cleveland delivery	$2.05
Fuel Oil, buyers' cars, bbl	$1.50-$1.55

Refiners' and Jobbers' Supplies

Following are the average market prices for the week on the principal materials used by refiners and jobbers, f. o. b. shipping point as effective Dec. 31, 1918.

Refiners' Supplies	Dec. 31	Dec. 24
Soda Ash	$3.50 cwt.	$3.50 cwt.
Silicate of Soda	2.00 cwt.	2.00 cwt.
Sal Soda	1.75 cwt.	1.75 cwt.
Caustic Soda	4.75 cwt.	4.75 cwt.
Jobbers' Supplies		
Degras oil	60c gal.	60c gal.
English degras	25c lb.	25c lb.
Domestic degras	27c lb.	27c lb.
Chloride of Lime	2½c lb.	2½c lb.
Horse oil	18c lb.	18c lb.
Lard Oil—		
Ex winter strained	$1.62 gal.	$1.77 gal.
No. 1	1.27 gal.	1.42 gal.
Extra	1.57 gal.	1.72 gal.
Extra No. 1	$1.39 gal.	1.54 gal.
No. 2 Lard	1.25 gal.	1.40 gal.
Tallow Oil	1.57 gal.	1.72 gal.
Neatsfoot Oil—		
Pure	$2.07 gal.	$2.22 gal.
Extra	1.39 gal.	1.54 gal.
No. 1	1.27 gal.	1.42 gal.
Menhaden fish oil	1.40 gal.	1.50 gal.
Whale oil	1.40 gal.	1.40 gal.
Soya bean oil	17¾c lb.	18½c lb.
*Rosin oil, 1st run	83c gal.	86c gal.
*Rosin oil, 2nd run	80c gal.	88c gal.
Linseed oil	1.62 gal.	1.57 gal.
**Turpentine	65¼c gal.	64c gal.
Pine Tar—		
Kiln burnt oil, bbls.	$13.25	
Retort oil, bbls.	$14.25	

*F. O. B. barrels, shipping point.
**Savannah, Ga., market.

Small Drop In Nov. Mexican Shipments

TAMPICO, Dec. 30.—Oil shipments from Mexico for November total 5,505,834 barrels, a moderate decline from October shipments of 5,834,952 barrels. Shipments by companies are as follows:

Huasteca Petroleum Company (Mexican Petroleum Co.). 1,651,109.71 barrels; Aguila, 1,082,494; Penn. Mex Fuel 798,863.43; Cortez, 411,484; Freeport Mexican, 342,993.76; East Coast Oil Company, 293,066.46; Texas Company, 292,456.40; Island Oil & Transport, 259,778.02; Mexican Gulf Oil Company, 183,200.03; Pierce Navigation Company, 129,450; National Petroleum Company, 60,998. Indications point to an increase of shipments for December.

The decrease in production is already being made up by turning on one of the company's wells situated in the Amatlan district, the Naranjos No. 4, which has a daily output of 50,000 barrels. The Naranjos No. 4 was brought in four years ago by the Eagle Oil Company and is said to have shown a capacity of more than 100,000 barrels a day. It was capped and was kept closed down until a few days ago.

The Eagle Company plans to release the flow of another well which it owns in the Chinapa district as soon as the necessary pipe line facilities can be provided for handling the product.

Crude Oil Quotations

Crude Prices

Quoted by the predominating pipe line companies in each field. All prices are at the well in barrels of 42 gallons, Dec. 31, 1918.

EASTERN FIELDS

Prices

	Dec. 31, 1918	Jan. 1, 1918	Jan. 1, 1917
Pennsylvania	$4.00	$3.75	$2.85
Cabell	2.77	2.73	2.22
Wooster, O.	2.58	2.38	1.80
Corning	2.85	2.80	2.25
North Lima	2.38	2.08	1.58
South Lima	2.38	2.08	1.58
Indiana	2.28	1.98	1.43
Princeton	2.42	2.12	1.62
Somerset	2.60	2.55	2.05
Ragland	2.32	1.20	.95
Illinois	2.42	2.12	1.62
Plymouth	2.33	2.03	1.53
Canadian Petrolia	2.78	2.48	1.98

MID-CONTINENT

Kans.-Okla.	$2.25	$2.00	$1.40
Healdton	1.45	1.20	.75

TEXAS FIELDS

North Texas

		Jan. 1, 1918	Jan. 1, 1917
Electra	$2.25	$2.00	$1.47
Henrietta	2.25	2.00	1.40
Corsicana light	2.25	2.00	1.40
Corsicana heavy	1.30	1.05	.75
Strawn	2.25	2.00	1.40
Moran	2.25	2.00	1.40
Ranger	2.25	....	....

Gulf Coast

Spindletop	$1.80	$1.05	$ .90
Goose Creek	1.80	1.00	....
Sour Lake	1.80	1.00	.90
Humble	1.80	1.00	.90
Batson	1.80	1.00	.90
Saratoga	1.80	1.00	.90
Dayton	1.80	1.00	.80

LOUISIANA FIELDS

Caddo, above 38°	$2.25	$2.00	$1.50
De Soto, above 38°	2.15	1.90	1.40
Caddo, 35°	2.15	1.90	1.40
Caddo, 32°	2.10	1.85	1.35
Caddo, crude	1.55	1.00	.85
Crichton	1.75	1.50	1.10

Wyoming

Elk Basin	$1.85	....	$1.85
Grass Creek	1.85	....	1.75
Big Muddy	1.50	....	1.40
Salt Creek	1.50	....	....

CALIFORNIA

San Joaquin Valley Fields

(Kern River, Midway Sunset, McKittrick, Lost Hills-Belridge, Coalinga.)

14 deg. to and including 17.9 deg. $1.23

18 deg. to and including 18.9 deg. 1.24

and for each increase in gravity of one (1) full deg. above 18.0 deg. gravity, to and inclusive of 29.4 deg. gravity, one (1) cent per barrel additional.

25 deg. to and including 25.9 deg. $1.32

and for each increase in gravity of one (1) full deg. above 25.0 deg. gravity up to and inclusive of 36.9 deg. gravity, two (2) cents per barrel additional.

37 deg. to and including 37.9 deg. $1.57

and for each increase in gravity of one (1) full deg. above 37.0 deg. gravity, three (3) cents per barrel a ldditional.

Whittier-Fullerton and Santa Maria Fields

Crude from these fields is quoted the same as for San Joaquin Valley Fields above, except the lower gravity crude purchased is 16 degrees.

Ventura County

25 deg. to and including 25.9 deg. $1.32

and for each increase in gravity of one (1) full deg. above 25.0 deg. gravity, up to and inclusive of 36.9 deg. gravity, two (2) cents per barrel additional.

37 deg. to and including 37.9 deg. $1.57

and for each increase in gravity of one (1) full deg. above 37.0 deg. gravity three (3) cents per barrel additional.

Tank Wagon, Service Station Markets

Standard Oil Company's service station and tank wagon quotations on gasoline and tank wagon prices for kerosene in cents per gallon.

	Gasoline Tank Wagon Dec. 31	Gasoline Service Station Dec. 31	Oil Tank Wagon Dec. 31
EASTERN POINTS			
New York	24.5	26.5	12.5
Boston	25.5	27.5	12.5
Philadelphia	24.2	27	12
Newark, N. J.	22.5	24.5	9.5
Buffalo	23.5	25.5	11.5
Pittsburgh	24.2	27	12
Cleveland	25.5	25.5	13.5
MIDDLE WEST			
Chicago	23	23	12
St. Louis	22.4	22.4	11.4
East St. Louis	22.5	22.5	11.5
Omaha, Neb.	24	24	12.75
Kansas City	22.3	22.3	10.8
Peoria, Ill.	23	23	12.5
Detroit	23.7	23.7	12.7
Indianapolis	23	23	12.5
Minneapolis	24	24	12.5
LaCrosse, Wis.	22.5	23.9	12.9
Fargo, S. Dak.	26.1	26.1	14.3
Sioux City, Ia.	22 9	22.9	12
Oklahoma City	23.5	24.5	13.5
Bartlesville, Okla.	23	23	12
Tulsa	23.5	25.5	13.5
SOUTHERN POINTS			
Louisville, Ky.	23.5	25.5	12 5
Atlanta, Ga.	24.5	26.5	14
Fort Worth	24.5	25.5	14.5
Houston, Texas	23.5	25.5	14.5
Galveston, Texas	24	26	15
New Orleans	23	23	12
Nashville, Tenn.	23.5	26.5	13.5
Memphis, Tenn.	23	23	13
ROCKY MOUNTAINS			
Denver, Col.	24	26	15.5
Casper, Wyo.	23	23	12.5
Basin, Wyo.	25	25	14.5
Cody, Wyo.	26.5	26.5	15.5
Lander, Wyo.	25	25	14.5
Cheyenne	24	26	15.5
Billings, Mont.	26.5	26.5	15.5
Miles City, Mont.	28	28	17
Great Falls, Mont.	28	28	17
FAR WEST			
San Francisco	20.5	20.5	9.5
Los Angeles	20 5	20.5	10
Portland, Ore.	21.5	21.5	10.5
Seattle, Wash.	21.5	21.5	10.5
Spokane, Wash.	25	25	13.5
Tacoma, Wash	21.5	21.5	10.5

Report Activity In All Cylinder Stocks

By Special Correspondent

PITTSBURGH, PA., Dec. 30.—Activity in cylinder stocks and signs of a recovery in fuel oil gave life to the wholesale oil market during the Yuletide week. While it was an off week in a number of ways it also seemed to be a period of some interesting developments.

Fuel oil opened the week heavy, partially because of some heaviness in upcountry centers, but this was only a temporary condition, and sales were made here late in the week at 9 cents per gallon. There are no heavy deliveries at this level, largely because the distributors have contracts at higher prices, and the recent break is considered more spectacular than genuine. Now that cold weather is here and the forecasters predict a severe wintry spell during January, a steady improvement in demand and price is expected.

No cylinder stocks of note are available, as several interests made unsuccessful bids at prices from ½ to ¾ cent above the market. This very strong market is thought to be due to the opening up of export business.

Automobile oils are a shade weaker and water white oil is quiet. There is a wide difference of opinion as to the proper market on light gasoline, now that aviation needs no longer exist. Some dealers are said to be a cent a gallon above what others maintain is the suitable price. Still others are one cent a gallon below the average quotation. Until the trade ascertains more definitely just what stocks rival companies are carrying in their tanks this one cent variation is likely to continue.

Napthas are moving freely and wax is firm.

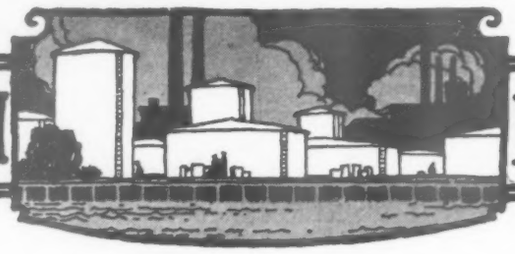
MIDCO BULLETIN

LIMITED QUANTITIES

24-28 FUEL OIL
56-57 GASOLINE
58-60 GASOLINE

Wire, write or phone for quotations

Midco Oil Sales Company
Conway Bldg. Chicago



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LAKESIDE PETROLEUM CO.
C.L. Maguire President *Harry Shaw Secretary*
McCORMICK BUILDING, CHICAGO
NEW WORLD BLDG. TULSA BARTLES BLDG. ST. PAUL

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Petroleum and Its Products

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Naphtha—Kerosene—Gas Oil—Fuel Oil

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General Offices:
Gallais Building
Tulsa, Oklahoma

Refinery:
Yale, Oklahoma

OIL FINANCE

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Pierce Oil 8 Mos. Net Income Is $2,534,683

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Consolidated Balance Sheet.

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6% 5-year conv. g. notes	1,975,000	2,000,000
6% . yr. gold notes	114,800	.....
Pipe line const. loan:		
Due 1919	500,000	1,000,000
Due 1920	500,000	
Mtg. on tank st'm'r	630,000	630,418
Profit & loss sur.	11,214,111	8,693,561
Total	$48,985,326	$46,753,664

*Includes capital stock and advances to Compania Mexicana de Combustible and Midwest Producing Company.

†The new stock listed on the New York Stock Exchange increases this amount to $19,189,250.—V. 107, p. 2295.

‡Payable at 105% of face value July 1, 1924.

Lists Properties Of Pittsburgh Oil & Gas

The Pittsburgh Stock Exchange issued December 17, 1918, at the time of the listing of $1,000,000 of new stock noted below, the following information regarding the Pittsburgh Oil & Gas Company:

"Incorporated (March 23, 1903), in Delaware. Main office, Farmers' Bank Building, Pittsburgh, Pa.

"Capitalization—Stocks (all of one class), Par $5. Authorized $3,000,000. Outstanding $2,500,000. Capitalization—Bonds (Southern Oil Co.), Authorized $500,000. Outstanding $252,000.

"Dividends at the rate of 8 per cent per annum have been paid each February, May, August and November since May 1, 1917.

"Bonds outstanding are those of Southern Oil Company (a subsidiary company), they are first mortgage 6 per cent. dated January 1, 1916, due $27,000 each six months beginning July 1, 1916; interest J. and J., tax-free. Of the entire issue $180,000 have been paid and canceled; $68,000 have not been

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25 Broad Street New York

issued and $252,000 are outstanding. Olean Trust Company, Olean, N. Y., trustee. The Pittsburgh Oil & Gas Company owns all of the outstanding bonds amounting to $113,000 of a subsidiary company named Jantha Light & Fuel Company.

"Capital stock—Originally $6,000,000 (60,000 shares, par $100). On September 9, 1907, there was authorized $5,000,000 preferred stock, but none ever issued. On May 1, 1917, capital stock was reduced from $6,000,000 to $2,000,000. Of the new stock (400,000 shares, par $5), 180,000 shares ($900,000), was issued in exchange for the old stock ($6,000,000, par $100 per share), and 175,000 shares ($875,000), together with $25,000 cash was issued in exchange for new property in Oklahoma and 45,000 shares ($225,000) was sold for cash to stockholders at par ($5).

"On July 31, 1918, an increase in capital from $2,000,000 to $3,000,000 was authorized. Of that $1,000,000 of new stock $250,000 (50,000 shares), was to be sold to stockholders of record of November 19, 1918, at par ($5), and $250,000 (50,000 shares), together with $12,511 cash, to be issued to acquire the properties of the United Oil & Gas Company and the Wildwood Oil Company. A balance of $500,000 of stock remain unissued in the treasury for future needs.

"Company owns (one unfinished), 9 gasoline producing plants with a daily capacity of 1,000 gallons. Total number of producing wells, 1,125. Daily average oil production equals 810 barrels. Total oil acreage equals 62,325 acres situated in nine different states."

PITTSBURGH, Dec. 31. — Directors of the Oklahoma Natural Gas Company met in Pittsburgh a few days ago and decided to postpone the formation of a $3,000,000 subsidiary oil company that had been planned, giving as a reason the tax provisions of the pending revenue measure.

The specific clauses of the bill which served to postpone the organization of a new company being the income and excess profits tax provisions.

The company's board declared the usual quarterly dividend of one-half of 1 per cent, official announcement following that the stock now was on a 10 per cent basis. The stock leaped from 29 to 32½ during the meeting but later reacted to around 23½.

Texas & Pacific Coal & Oil stock has been the feature of the unlisted security market recently, with sales as high as 1,350, an advance of 75 points in a few days. Stock has been unusually active recently due to buying by large oil interests. The company has a production of more than 12,000 barrels in the new Ranger field, Texas, and in addition has a number of wells drilled to the sand, the completion of which awaits new transportation facilities. Contracts have been let with other big oil companies to drill more than one hundred wells.

The Eureka Pipe Line Company has declared a dividend of $5 a share for the first quarter of 1919, payable February 1st. This is at the same rate as the company paid during the second half of 1918 and compares with payments at the rate of $24 per annum for the two years and a half preceding.

How Oil Shares Moved Last Week

	High 1918	Low 1918	No. Shares Sold	Price Dec. 21	Week's High	Week's Low	Price Dec. 27
NEW YORK STOCK MARKET							
Cal. Petroleum	24⅜	18¼	1,000	.....	20¾	20⅜	20⅜
Mex. Petroleum	194	79	72,400	167⅜	170	165½	168
Ohio Cities Gas	48	35⅜	6,100	43	43	42⅜	43
Pierce Oil	19½	13	2,500	16	16	15¾	16
Royal Dutch	145	70½	4,900	104½	105½	101	102
Sinclair Oil Corporation	39	25¾	27,400	.....	33⅞	32⅜	33
Texas Co	203	136½	4,500	188	188½	186	188½
Pan.-Amer. Pet. Co	72¾	40	8,200	66⅛	66⅞	64½	65¾
NEW YORK CURB MARKET							
Cosden & Co	8⅞	6	11,100	6⅞	7	6¾	6⅞
Cosden pfd	4¾	3½	400	.....	4¾	4	.....
Elk Basin Pet	7½	⅝	900	.....	6	5⅞	5⅞
Federal Oil	4	1⅝	7,500	2⅛	2⅛	1⅞	2
Glenrock Oil	5	3⅛	4,400	3⅛	3½	3⅞	3½
Houston Oil	86½	39¾	300	.....	71½	71	.....
Int. Petroleum	17⅜	12¾	10,700	18	18⅝	17	18¾
Island Oil & Trans	6¼	1¾	24,500	6	6	5⅝	5¾
Merritt Oil Corp	29⅞	17½	500	.....	23¾	23	.....
Midwest Oil	$1.35	87c	50,000	$1.19	$1.35	$1.17	$1.17
Midwest Refg	138	97	1,300	123½	124½	122	.....
Okla. Prod. & Refg	10¾	6¼	14,400	9½	9¾	9⅜	9⅜
Okmulgee Refg	11¾	1⅜	No sales recorded.				
Sapulpa Refg	10¼	6¼	700	.....	7	6⅞	6⅞
Sinclair Gulf	24½	15	6,000	20	22⅛	19¼	21

STANDARD OIL GROUP.

Standard Oil securities are dealt with to only a small extent on the New York curb market, the great majority of sales being made over the counters of investment bankers. For this reason no record can be obtained of the total volume of sales from day to day to indicate the activity of any particular stock. Below are bid and asked quotations prevailing on the curb market at the close of business on the date given, the same quotations prevailing in the majority of unrecorded transactions:

	Dec. 27 Bid	Dec. 27 Asked	1918 High	1918 Low
Anglo-Amer	17¼	17¾	18	11¾
Atlantic Refg	1,010	1,025	1,020	975
Buckeye Pipe Line	94	97	100	90
Cont. Oil Co	475	500	510	420
Galena Signal	90	95	145	83
National Transit	15	16	.....	.....
Ohio Oil	315	320	365	299
Ill. Pipe Line	150	160	192	146
Penn. Mex	62	64	64	25
Prairie Oil & Gas	590	600	599	418
Prairie Pipe Line	265	270	292	248
South. Penn. Oil	290	300	300	250

	Dec. 27 Bid	Dec. 27 Asked	1918 High	1918 Low
Solar Refg. Co	332	525	305	290
S. O. California	243	248	245	210
S. O. Indiana	720	740	750	620
S. O. Kansas	525	550	530	435
S. O. Kentucky	330	350	340	300
S. O. N. J	648	653	652	510
S. O. N. Y	298	302	305	252
S. O. Ohio	450	480	.....	.....
Vacuum Oil	387	393	399	31.
Union Tank Line	103	106	109	85

MISCELLANEOUS STOCKS.

The following are bid and asked prices ruling at the close of business on the date given on the Cleveland and Pittsburgh stock markets, with the high and low marks reached during 1918:

	Bid	Asked	High	Low
Cities Service	286	289	323½	201½
Cities Ser. pfd	80	80¾	138	65¾
Paragon Refg	27⅝	28	28	21¼
Paragon pfd	99	.....	99	95½
National Refg	179	190	203	170
Nat. Refg. pfd	123	Bid	126	125
Lone Star Gas	176	Bid	197	95

Directors of the Anglo-American Oil Company, Ltd., have declared an interim dividend of three shillings per share from the net earnings of the current year, free of British income tax, payable January 15th by the National Provincial & Union Bank of England, Ltd., or branches, or by the Guaranty Trust Company, New York, at the equivalent in United States currency of $4.75 per pound sterling (equal to 71¼ cents per share), to all holders of share warrants to bearer issued in exchange for coupon No. 16 attached to such share warrants.

From a total of 1,671 Doherty men who entered the government service, only twelve deaths have been reported. The information of six of these fatalities came with the signing of the armistice.

PITTSBURGH, Dec. 27. — Alvin Donnan, lawyer, banker, former oil operator, churchman, college trustee, and one of the foremost men of Washington county, died yesterday at his home in Washington, Pa. He had been ill several months. Born in Hickory, Washington county, 66 years ago, Mr. Donnan was best known as an attorney, having practiced from 1877 to 1917. A number of years ago he was prominent in the oil industry.

The Standard Oil Company of C[illegible] lost one of its branch managers on I[illegible]ber 20th thru the death of Morris F. [illegible]r, of Greenville, Ohio, manager o[illegible] the Darke county branch. Mr. Taylor's death followed an attack of influenza.

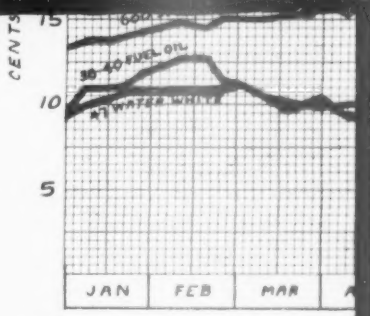
The decedent had been in the oil business for many years, entering as a tank wagon driver. He leaves a wife, a son and a daughter.

Sept.	314,595,959	250,348,628	164,963,793	138,769,343	653,085,050	618,667,279	70,593,079	58,686,398
Oct.	314,251,318	265,634,890	164,928,640	135,775,025	661,780,441	608,327,006	72,244,633	66,289,783
Nov.		258,696,514		121,133,610		580,140,259		62,631,249
Dec.		243,175,209		118,987,502		551,287,109		59,023,661
10 mos. 1918	2,949,180,622		1,485,797,692		6,104,676,457		700,521,799	
All 1917	2,729,712,033		1,602,015,103		6,288,430,581		721,644,821	
All 1916	2,058,880,596		1,455,495,732		4,663,895,284		624,541,195	

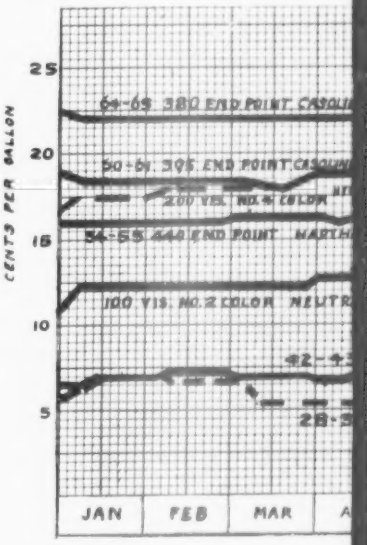
Exports Oil Products From U. S.

The table below shows exports from this country of various petroleum products for nine months of 1918, and for all of 1917 and 1916, the figures used being those issued by the Bureau of Foreign and Domestic Commerce. The significant point is the enormous shipments to Allied Europe of gasoline, exports of this product for 9 months of this year being larger than for all of 1917. Fuel oil shipments for 1918 were heavier than last year also. Kerosene and lubricating oil shipments were sacrificed to give more cargo space to gasoline and fuel oil exports to fill military needs.

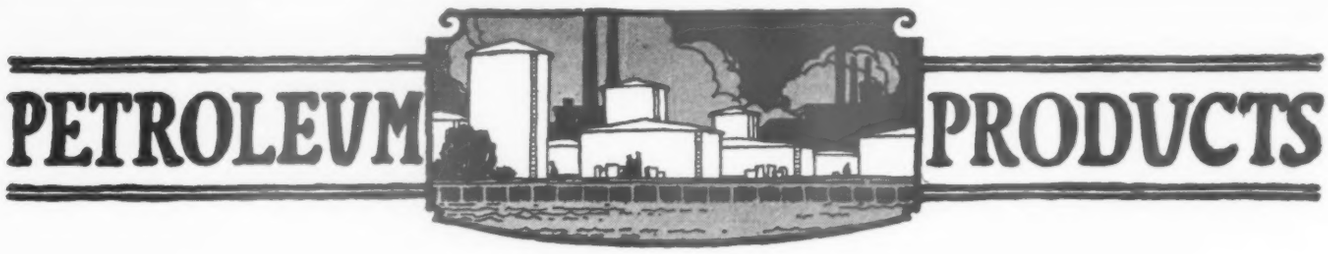
	Crude Gallons	Fuel, Gas Oil Gallons	Kerosene Gallons	Lub. Oils Gallons	Gasoline Gallons	Napthas, etc. Gallons
January	16,195,967	93,274,488	58,601,634	18,847,731	17,676,884	24,009,258
February	19,734,996	118,817,732	29,878,381	17,706,837	23,796,587	11,599,451
March	7,390,269	81,962,944	49,055,267	25,749,333	27,918,144	18,837,988
April	16,157,468	98,442,761	50,347,085	16,184,235	20,862,303	25,999,990
May	17,374,048	107,173,728	34,518,171	25,617,187	39,143,830	17,936,584
June	23,697,244	95,668,043	32,509,493	23,990,930	26,905,868	21,481,558
July	22,446,605	117,722,815	29,943,900	19,852,823	30,614,009	14,899,484
August	9,553,294	106,546,198	37,109,644	27,807,975	46,469,441	10,474,751
September	21,525,770	136,551,883	42,102,255	18,654,347	35,512,782	9,482,075
9 Months 1918	154,075,661	956,160,592	364,065,830	194,411,398	268,899,848	154,716,139
All 1917	171,258,309	1,123,490,081	652,710,138	280,935,241	224,811,186	191,437,877
All 1916	172,027,903	957,602,259	854,688,404	260,805,939	167,928,262	187,942,021



Range Of 1918



The two charts above give
1918. The figures on which
NATIONAL PETROLEUM
squares representing one cent.



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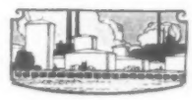

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6% . yr. gold notes	114,800	.....
Pipe line const. loan:		
Due 1919	500,000	1,000,000
Due 1920	500,000	
Mtg. on tank st'm'r	630,000	630,418
Profit & loss sur.	11,214,111	8,693,561
Total	$48,985,326	$46,753,664

*Includes capital stock and advances to Compania Mexicana de Combustible and Midwest Producing Company.

†The new stock listed on the New York Stock Exchange increases this amount to $19,189,250.—V. 107, p. 2295.

‡Payable at 105% of face value July 1, 1924.

Lists Properties Of Pittsburgh Oil & Gas

The Pittsburgh Stock Exchange issued December 17, 1918, at the time of the listing of $1,000,000 of new stock noted below, the following information regarding the Pittsburgh Oil & Gas Company:

"Incorporated (March 23, 1903), in Delaware. Main office, Farmers' Bank Building, Pittsburgh, Pa.

"Capitalization—Stocks (all of one class), Par $5. Authorized $3,000,000. Outstanding $2,500,000. Capitalization—Bonds (Southern Oil Co.), Authorized $500,000. Outstanding $252,000.

"Dividends at the rate of 8 per cent per annum have been paid each February, May, August and November since May 1, 1917.

"Bonds outstanding are those of Southern Oil Company (a subsidiary company), they are first mortgage 6 per cent. dated January 1, 1916, due $27,000 each six months beginning July 1, 1916; interest J. and J., tax-free. Of the entire issue $180,000 have been paid and canceled; $68,000 have not been

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issued and $252,000 are outstanding. Olean Trust Company, Olean, N. Y., trustee. The Pittsburgh Oil & Gas Company owns all of the outstanding bonds amounting to $113,000 of a subsidiary company named Jantha Light & Fuel Company.

"Capital stock—Originally $6,000,000 (60,000 shares, par $100). On September 9, 1907, there was authorized $5,000,000 preferred stock, but none ever issued. On May 1, 1917, capital stock was reduced from $6,000,000 to $2,000,000. Of the new stock (400,000 shares, par $5), 180,000 shares ($900,000), was issued in exchange for the old stock ($6,000,000, par $100 per share), and 175,000 shares ($875,000), together with $25,000 cash was issued in exchange for new property in Oklahoma and 45,000 shares ($225,000) was sold for cash to stockholders at par ($5).

"On July 31, 1918, an increase in capital from $2,000,000 to $3,000,000 was authorized. Of that $1,000,000 of new stock $250,000 (50,000 shares), was to be sold to stockholders of record of November 19, 1918, at par ($5), and $250,000 (50,000 shares), together with $12,511 cash, to be issued to acquire the properties of the United Oil & Gas Company and the Wildwood Oil Company. A balance of $500,000 of stock remain unissued in the treasury for future needs.

"Company owns (one unfinished), 9 gasoline producing plants with a daily capacity of 1,000 gallons. Total number of producing wells, 1,125. Daily average oil production equals 810 barrels. Total oil acreage equals 62,325 acres situated in nine different states."

PITTSBURGH, Dec. 31. — Directors of the Oklahoma Natural Gas Company met in Pittsburgh a few days ago and decided to postpone the formation of a $3,000,000 subsidiary oil company that had been planned, giving as a reason the tax provisions of the pending revenue measure.

The specific clauses of the bill which served to postpone the organization of a new company being the income and excess profits tax provisions.

The company's board declared the usual quarterly dividend of one-half of 1 per cent, official announcement following that the stock now was on a 10 per cent basis. The stock leaped from 29 to 32½ during the meeting but later reacted to around 23½.

Texas & Pacific Coal & Oil stock has been the feature of the unlisted security market recently, with sales as high as 1,350, an advance of 75 points in a few days. Stock has been unusually active recently due to buying by large oil interests. The company has a production of more than 12,000 barrels in the new Ranger field, Texas, and in addition has a number of wells drilled to the sand, the completion of which awaits new transportation facilities. Contracts have been let with other big oil companies to drill more than one hundred wells.

The Eureka Pipe Line Company has declared a dividend of $5 a share for the first quarter of 1919, payable February 1st. This is at the same rate as the company paid during the second half of 1918 and compares with payments at the rate of $24 per annum for the two years and a half preceding.

How Oil Shares Moved Last Week

	High 1918	Low 1918	No. Shares Sold	Price Dec. 21	Week's High	Week's Low	Price Dec. 27
NEW YORK STOCK MARKET							
Cal. Petroleum	24⅛	18¼	1,000	.....	20¾	20⅝	20⅝
Mex. Petroleum	194	79	72,400	167⅞	170	165½	168
Ohio Cities Gas	48	35⅛	6,100	43	43	42⅝	43
Pierce Oil	19½	13	2,500	16	16	15¾	16
Royal Dutch	145	70½	4,900	104½	105½	101	102
Sinclair Oil Corporation	39	25¼	27,400	.....	33⅜	32⅛	33
Texas Co	203	136½	4,500	188	188½	186	188½
Pan.-Amer. Pet. Co	72¾	40	8,200	66⅛	66⅞	64½	65¾
NEW YORK CURB MARKET							
Cosden & Co	8⅞	6	11,100	6⅞	7	6¾	6⅞
Cosden pfd	4¼	3½	400	.....	4¼	4	.....
Elk Basin Pet	7½	5⅝	900	.....	6	5⅞	5⅞
Federal Oil	4	1⅝	7,500	2⅛	2⅛	1⅞	2
Glenrock Oil	5	3⅛	4,400	3⅛	3½	3⅜	3½
Houston Oil	86½	39¾	300	.....	71½	71	.....
Int. Petroleum	17⅜	12¾	10,700	18	18⅝	17	18¾
Island Oil & Trans	6¼	1¾	24,500	6	6	5⅝	5¾
Merritt Oil Corp	29⅞	17½	500	.....	23¾	23	.....
Midwest Oil	$1.35	87c	50,000	$1.19	$1.35	$1.17	$1.17
Midwest Refg	138	97	1,300	123½	124½	122	.....
Okla. Prod. & Refg	10¼	6¼	14,400	9½	9¾	9⅜	9⅜
Okmulgee Refg	11¼	1⅝	No sales recorded.				
Sapulpa Refg	10¼	6¼	700	.....	7	6⅞	6⅞
Sinclair Gulf	24½	15	6,000	20	22⅛	19¾	21

STANDARD OIL GROUP.

Standard Oil securities are dealt with to only a small extent on the New York curb market, the great majority of sales being made over the counters of investment bankers. For this reason no record can be obtained of the total volume of sales from day to day to indicate the activity of any particular stock. Below are bid and asked quotations prevailing on the curb market at the close of business on the date given, the same quotations prevailing in the majority of unrecorded transactions:

	Dec. 27 Bid	Dec. 27 Asked	1918 High	1918 Low
Anglo-Amer	17¾	17¾	18	11¾
Atlantic Refg	1,010	1,025	1,020	975
Buckeye Pipe Line	94	97	100	90
Cont. Oil Co	475	500	510	420
Galena Signal	90	95	145	83
National Transit	15	16	.....	.....
Ohio Oil	315	320	365	299
Ill. Pipe Line	150	160	192	146
Penn. Mex	62	64	64	25
Prairie Oil & Gas	590	600	599	418
Prairie Pipe Line	265	270	292	248
South. Penn. Oil	290	300	300	250

	Dec. 27 Bid	Dec. 27 Asked	1918 High	1918 Low
Solar Refg. Co	332	525	305	290
S. O. California	243	248	245	210
S. O. Indiana	720	740	750	620
S. O. Kansas	525	550	530	435
S. O. Kentucky	330	350	340	300
S. O. N. J.	648	653	652	510
S. O. N. Y.	298	302	305	252
S. O. Ohio	450	480	.....	.....
Vacuum Oil	387	393	399	31.
Union Tank Line	103	106	109	85

MISCELLANEOUS STOCKS.

The following are bid and asked prices ruling at the close of business on the date given on the Cleveland and Pittsburgh stock markets, with the high and low marks reached during 1918:

	Dec. 27 Bid	Dec. 27 Asked	1918 High	1918 Low
Cities Service	286	289	323½	201½
Cities Ser. pfd	80	80¾	138	65¾
Paragon Refg	27⅝	28	28	21¼
Paragon pfd	99	.....	99	95½
National Refg	179	190	203	170
Nat. Refg. pfd	123	Bid	126	125
Lone Star Gas	176	Bid	197	95

Directors of the Anglo-American Oil Company, Ltd., have declared an interim dividend of three shillings per share from the net earnings of the current year, free of British income tax, payable January 15th by the National Provincial & Union Bank of England, Ltd., or branches, or by the Guaranty Trust Company, New York, at the equivalent in United States currency of $4.75 per pound sterling (equal to 71¼ cents per share), to all holders of share warrants to bearer issued in exchange for coupon No. 16 attached to such share warrants.

From a total of 1,671 Doherty men who entered the government service, only twelve deaths have been reported. The information of six of these fatalities came with the signing of the armistice.

PITTSBURGH, Dec. 27. — Alvin Donnan, lawyer, banker, former oil operator, churchman, college trustee, and one of the foremost men of Washington county, died yesterday at his home in Washington, Pa. He had been ill several months. Born in Hickory, Washington county, 66 years ago, Mr. Donnan was best known as an attorney, having practiced from 1877 to 1917. A number of years ago he was prominent in the oil industry.

The Standard Oil Company of O[illegible] lost one of its branch managers on D[illegible]ber 20th thru the death of Morris F. [illegible]or, of Greenville, Ohio, manager o[illegible] the Darke county branch. Mr. Taylor's death followed an attack of influenza.

The decedent had been in the oil business for many years, entering as a tank wagon driver. He leaves a wife, a son and a daughter.

Initial, Present Production, Sand Record

Including Eastland and Stephens Counties, and Du

Eastland County

Company	Farm—Well	Date Comp.	Initial Prod.	Present Prod.	Sand Record
Texas Pacific	J. H. McCleskey 1.	10-17	1200	10	3414-3425
Texas Pacific	B. P. Davenport 1.	3-18	890	90	3418-3426
Texas Pacific	O. P. England 1	5-18	400	....	3382-3406
Texas Pacific	L. Williams 1	5-18	100	....	3355-3390
Texas Pacific	N. Walker 1	5-18	510	43	3390-3306
Cunningham et al	D. C. Pratt 1	6-18	30	....	3193-3213
Texas Pacific	Floyd Brewer 1	6-18	2000	40	3208-3306
Texas Pacific	T. Duncan 1	6-18	1000	35	3375-3392
Texas Pacific	W. M. Meyers 1	6-18	10	....	3388-3406
Texas Pacific	J. M. Rust 1	6-18	650	6	3443-3458
Texas Pacific	J. W. Shook 1	6-18	150	4	3363-3402
Texas Pacific	R. C. Stuard	6-18	60	5	3390-3404
Prairie O. & G	Ida Slayden 1	7-18	3800	100	3442-3447
Texas Pacific	M. H. Hagaman 1.	7-18	65	....	3244-3276†
Plains O. & G	Barnett 1	7-18	200	9	3158-3188
Humble O. & R. & V. Republic	J. W. Jones 1	7-18	4000	80	3474-3492
Heenan & Coe	Bryant 1	7-18	150	5	3070-3187
Crosbie & Davis	J. E. Crosbie 1	7-18	60	5	1340-1365††
Cunningham et al	R. E. Riddle 1	7-18	10	....	3315-3359†
Joe Bartles et al	Gholson 1	8-18	1200	8	3481-3490
Beaver Valley	J. W. Barber 1	8-18	20	....	3182-3208†
Crosbie & Davis	J. E. Crosbie 2	8-18	20	5	1323-1340††
McAlister et al	H. Brashear 1	8-18	10	83	3467-3491†
Owen & Wilson	W. L. Yandell 1	8-18	25	....	3170-3190†
Prairie O. & G	T. J. Earnest 1	8-18	300	329	3295-3300
Sammies O. Corp	Dean 1	8-18	30	4	3190-3200†
Sun Company	Allen 1	8-18	240	3	3018-3032
Texas Pacific	S. W. Bobo 1	8-18	540	108	3215-3230
Texas Pacific	H. Brashear 1	8-18	100	33	3241-3285†
Texas Pacific	Floyd Brewer 2	8-18	2000	90	3297-3302
Texas Pacific	Floyd Brewer 11	8-18	2000	90	3287-3304
Texas Pacific	A. S. Davenport 1.	8-18	200	5	3402-3487
Texas Pacific	S. V. Davis 1	8-18	1200	200	3215-3219
Warren Wagner et al.	Merriman 1	8-18	2300	90	3265-3274
Prairie O. & G	T. P. Fee 1	9-18	30	6	3195-3200
Prairie O. & G	Keaghey 1	9-18	300	40	3188-3200
Prairie O. & G	W. Howard 1	9-18	1000	475	3515-3517
Texas Pacific	Floyd Brewer 9	9-18	1100	90	3200-3296
Texas Pacific	J. E. Butler 1	9-18	300	1500	3353-3356
Crosbie & Davis	J. E. Crosbie 4	10-18	30	5	1313-1330
Gulf Prod. Co	Taylor 1	10-18	1200	250	3441-3462
Heenan & Coe	Bryant 2	10-18	10	5	3195-3210†
Humble-Republic	Jones 2	10-18	1200	40	3504-3518
Lone Star	Goforth 1	10-18	150	5	3481-3494
Magnolia Pet. Co.	C. U. Connellee 1.	10-18	30	5	1326-1360†-††
Magnolia	W. E. Rock 1	10-18	3000	60	3502-3505
Plains O. & G	A. J. Harrison 1	10-18	15	....	3169-3184†
Plains O. & G	Rust & Weir 1	10-18	10	....	3180-3188†
Prairie O. & G	J. R. Wood 1	10-18	1800	90	3458-3469
J. E. Crosbie	Dr. Terrell 1	10-18	10	4	3440-3480†
Crosbie & Davis	J. E. Crosbie 3	10-18	20	5	1354-1360†-††
Ranger-Duncan	M. Sibley 1	11-18	30	....	3273-3276
Crowell & Gant	Church Lot 1	11-18	1500	100	3538-3542
Heenan & Coe	W. E. Rock 1	11-18	1800	40	1334-1341
Crosbie & Davis	J. E. Crosbie 5	11-18	40	5	3280-3284
Texas Pacific	Floyd Brewer 14.	11-18	1200	110	3470-3480
Texas Pacific	J. W. Tibbles 1.	11-18	60	6	3385-3397
Texas Pacific	N. S. Whitson 1	11-18	535	101	3270-3280
Warren Wagner et al.	Merriman 2	12-18	1200	90	3285-3291
Texas Pacific	R. H. Clemmer 1.	12-18	1000	300	3270-3280
Texas Pacific	Floyd Brewer 3	12-18	1200	90	3560-3563
Heenan & Coe	W. E. Rock 2	12-18	1000	30	3555-3560†
Texas Pacific	W. L. McCleskey 1	12-18	400	1300	3198-3210
Texas Pacific	W. Rice 1	12-18	100	19	3460-3478
Texas Pacific	B. P. Davenport 2.	12-18	850	90	3422-3440
Prairie O. & G	J. W. Terry 2	12-18	200	10	3456-3485†
Prairie O. & G	J. W. Terry 3	12-18	200	10	3370-3380
Prairie O. & G	Emma Terrell 1	12-18	6000	25	3456-3470
Magnolia	E. H. Webb 1	12-18	7	4	1350-1356††
Texas Pacific	M. V. Brewer 1	1-19	Gas	10	3246-3259†
Texas Pacific	M. V. Brewer 2	1-19	150	15	3250-3260
Texas Pacific	J. B. Hand 1	1-19	1000	241	3285-3300
Texas Pacific	J. H. Layne 1	1-19	100	....	....
Prairie O. & G	D. A. Hestilow 1	1-19	200	159	3430-3435
Prairie O. & G	Ida Slayden 4	1-19	1500	60	3480-3490
Prairie O. & G	T. J. Earnest 2	1-19	600	518	3291-3300
Prairie O. & G	T. W. Duncan 1	1-19	265	40	3400-3410
Prairie O. & G	Duncan et al 1	1-19	1000	90	3340-3365
Magnolia	W. E. Rock 2	1-19	1500	60	3522-3555
Magnolia	T. J. Nash 1	1-19	1500	50	3508-3570
Magnolia	T. J. Nash 2	1-19	1500	70	3457-3460
Magnolia	T. W. Connellee 1	1-19	4920	1625	3407-3417
Gulf Prod. Co	F. W. Taylor 2	1-19	1400	400	3440-3460
Gulf Prod. Co	F. W. Taylor 3	1-19	1500	350	3456-3485
Gulf Prod. Co.	State-Collett 2	1-19	1000	300	3455-3460
Gulf Prod. Co	J. B. Black 1	1-19	50	20	3170-3190†
Humble-Republic	J. W. Jones 3	1-19	30	20	3453-3479
Texas Company	M. H. Hagaman 1	1-19	100	30	3248-3255
Texas Company	A. L. Duffer 4	1-19	600	15	3436-3470
Texas Company	A. L. Duffer 5	1-19	400	18	3455-3478
Sun Company	Rust 1	1-19	900	200	3428-3488
McManus et al	McDowell 1	1-19	100	....	3174-3192
John H. Markham, Jr., & System O. Co.	S. F. Copeland 2	1-19	600	60	3476-3488†
Gladstone O. & R.	Barton 2	1-19	1500	100	3509-3519
Hivick & Mohler	T. P. Fee 1	1-19	10	....	3440-3450
J. L. Hamon et al.	McCleskey 3	1-19	1200	300	3412-3422
States O. Corp	Parrack 1	1-19	200	....	3665- †-††
Mid-Kansas O. & G.	McCleskey 2	1-19	1200	254	3390-3410
Texas Pacific	Floyd Brewer 13.	1-19	1150	100	3290-3312
Texas Pacific	D. E. McCleskey 1	2-19	800	100	3438-3458
Texas Pacific	J. H. McCleskey 2.	2-19	50	10	3331-3378
Texas Pacific	J. M. McCleskey 6	2-19	100	20	3375-3396†
Texas Pacific	J. H. McCleskey 3.	2-19	50	10	3400-3416†
Plains O. & G	Haynes 1	2-19	90	34	3176-3185†
Joe Bartles et al	Gholson 2	2-19	50	4	3465-3478†
Humble-Republic	J. W. Jones 7	2-19	65	10	3502-3519†
Humble-Republic	J. W. Jones 8	2-19	200	20	3408-3533
J. L. Hamon et al	McCleskey 2	2-19	1200	450	3465-3478
Humble O. & R	Patton 1	2-19	20	....	3287-3296†
Magnolia	C. U. Connellee 2.	2-19	5	2	1412-1418†-††
Magnolia	N. B. Harris 1	2-19	1500	1763	3394-3402
Markham-System	S. F. Copeland 3.	2-19	525	300	3500-3512
Prairie O. & G	Meyers 2	2-19	2500	600	3297-3309
Texas Pacific	G. E. Norwood 1.	2-19	11500	2842	3387-3412
Markham-System	S. F. Copeland 6	2-19	5500	1200	3463-3477
Benedum-Trees	C. U. Connellee 1.	3-19	60	10	3291-3316
Gulf Prod. Co	Brelsford 1	3-19	65	20	3204-3292†
Heenan & Coe	Rock 4	3-19	700	90	3496-3501†
Humble O. & R	Hunt 1	3-19	60	35	....
Markham-System	S. F. Copeland 4	3-19	Gas	700	3504-3508
Markham-System	S. F. Copeland 5	3-19	5000	1000	3437-3451
Prairie O. & G	A-1 Christmas	3-19	200	54	3465-3485†
Prairie O. & G	A-2 Christmas	3-19	800	650	3440-3470
Prairie O. & G	Ida Slayden 5	3-19	1200	100	3468-3490
Prairie O. & G	T. P. Fee 4	3-19	90	10	3207-3212
Prairie O. & G	J. R. Wood 4	3-19	500	40	3450-3478
Ranger P. & R	Hinman 1	3-19	10	5	3170-3190†
Sun Company	Duncan 2	3-19	50	15	3365-3388†
Texas Pacific	Floyd Brewer 5	3-19	500	140	3278-3295
Texas Pacific	J. H. Clemmer 1	3-19	25	5	3325-3335†-††
Texas Pacific	J. B. Hand 2	3-19	800	208	3287-3304
Texas Pacific	Henson 1	3-19	100	54	3250-3278†
Texas Pacific	W. R. Hodges 3	3-19	10	15	3375-3400†
Texas Pacific	Gerdes 1	3-19	10	10	3159-3195†
Texas Pacific	L. A. Galloway 1	3-19	5	....	3273-3301†
Steiner Oil Co	McCleskey 1	3-19	1000	200	3391-3401
Berry Walker	Walker Fee 1	3-19	20	10	3162-3181
Gladstone O. & R.	Barton 3	3-19	500	100	3290-3309††
J. L. Hamon et al	McCleskey 4	3-19	1000	300	3415-3431
Gulf Prod. Co.	F. W. Taylor 6	3-19	300	90	3390-3430
Markham-System	S. F. Copeland 7	3-19	1800	600	3490-3512
Mid-Kansas O. & G.	Layne 2	3-19	1300	400	3465-3475
Prairie O. & G	Terry 4	3-19	254	14	3463-3501
Prairie O. & G	J. W. Terry 1	4-19	50	10	3429-3470
Crowell & Gant	Church Lot 2	4-19	600	90	3280-3290
Magnolia	W. E. Rock 3	4-19	15	10	3551-3562
Magnolia	W. E. Rock 5	4-19	800	100	3512-3522
Sun Company	Rust 2	4-19	5000	1200	3422-3434
Texas Pacific	Floyd Brewer 17.	4-19	700	120	3290-3304
Texas Pacific	T. W. Duncan 2.	4-19	700	545	3410-3423
Markham-System	S. F. Copeland 1	4-19	30	....	3477-3497††
Dorsey et al	Harrison 3	4-19	500	300	3433-3444
Markham-System	B. L. Danley 1	4-19	200	600	3365-3386
Gulf Prod. Co.	F. W. Taylor 5	4-19	300	250	3412-3460
Warren Wagner et al.	Merriman 3	4-19	400	100	3280-3300
Prairie O. & G	Meyers 1	4-19	600	400	3325-3330
Prairie O. & G	Ida Slayden 2	4-19	200	60	3458-3487
Texas Pacific	J. H. McKinney 1	4-19	10	8	3425-3483†-††
Gulf Prod. Co.	F. W. Taylor 4	4-19	200	90	3505-3522†
T. L. Thompson	Thompson Fee 1	4-19	800	300	3450-3470
Magnolia	N. Walker 1	4-19	40	10	3243-3275††
Crosbie & Davis	J. E. Crosbie 6	4-19	100	75	3165-3210†
Texas Pacific	J. W. Fox 1	4-19	7	7	1324-1327†
Texas Pacific	J. W. Fox 2	4-19	7	7	1325-1332†
Texas Pacific	J. M. McCleskey 2	4-19	20	15	3292-3308†
Texas Pacific	J. S. Williams 1	4-19	40	20	3280-3304††
Dorsey et al	Harrison 4	4-19	6200	3500	3445-3465
Prairie O. & G	J. R. Wood 2	4-19	18	6	3483-3529†
Prairie O. & G	J. R. Wood 5	4-19	50	10	3444-3475†
Prairie O. & G	B-3 Christmas	4-19	600	200	3345-3391
Prairie O. & G	T. W. Duncan 2.	4-19	200	51	3294-3298
Humble-Republic	J. W. Jones 6	4-19	20	10	3519-3536†
Humble-Republic	J. W. Jones 9	4-19	600	200	3505-3528
Mid-Kansas O. & G.	Layne 1	5-19	90	5	3429-3492†
Folsom & Scheffler	Colony 1	5-19	500	500	3442-3504
Humble-Republic	J. W. Jones 10	5-19	600	400	3433-3446
Texas Company	S. W. Kennedy 1	5-19	500	300	3438-3456
Prairie O. & G	J. G. Christmas B-2	5-19	200	20	3408-3425
Humble O. & R	Patton 2	5-19	500	340	3395-3406
Prairie O. & G	H. R. Danley 1	5-19	2600	1870	3598-3602
Texas Pacific	Whitson 1	5-19	200	100	3330-3341†
McKenzie et al	S. S. Griffith 1	5-19	75	75	3489-3525
Gulf Prod. Co	Marie Barnes 1	5-19	500	300	3297-3365†
Prairie O. & G	Emma Terrell 11	5-19	75	40	3419-3455†
Texas Pacific	Floyd Brewer 18.	5-19	400	350	3290-3315
Texas Pacific	J. M. Butler 3	5-19	4 000	1952	3426-3451
Texas Pacific	J. B. Hand 3	5-19	1500	1200	3290-3315
Texas Pacific	L. Huffman 2	5-19	200	200	3282-3319
Texas Pacific	McCleskey Heirs 3	5-19	500	154	3403-3440
Dorsey et al	Harrison 2	5-19	5600	4000	3448-3466
Gladstone O. & R.	Barton 1	5-19	600	500	3517-3530
Gladstone O. & R.	Barton 5	5-19	50	11	3548-3556†
Prairie O. & G	Emma Terrell 8	5-18	1000	25	3458-3472
Prairie O. & G	T. P. Fee 7	5-19	20	4	3350-3385†
Sun Company	J. W. Cope 1	5-19	10	10	2986-3021†
Sun Company	Duncan 1	5-19	100	15	3135-3190†
Sun Company	Lauderdale 2	5-19	2800	2350	3375-3392†
Sun Company	J. E. Rust 3	5-19	1200	900	3420-3425
Texas Company	M. H. Hagaman 2	5-19	150	150	3452-3472
Sinclair Gulf	D. B. Thompson 1.	5-19	300	170	3318-3428
Magnolia	W. E. Rock 4	5-19	30	....	3505-3520
Magnolia	T. J. Nash 3	5-19	300	300	3614-3650
Magnolia	T. J. Nash 4	5-19	100	70	3686-3707†
Markham-System	S. F. Copeland 8	5-19	200	200	3495-3528
Markham-System	S. F. Copeland 11.	5-19	1500	900	3485-3507
Prairie O. & G	M. V. Brewer 1	5-19	50	27	3225-3256†
Prairie O. & G	Christmas B-1	5-19	700	312	3440-3478
Prairie O. & G	T. W. Duncan 3.	5-19	581	200	3330-3380
Prairie O. & G	Keaghey B-1	5-19	1200	43	3327-3350
Humble-Republic	J. W. Jones 5	5-19	20	10	3495-3522
Gulf Prod. Co.	J. B. Black 2	5-19	30	15	3300-3320†
Gulf Prod. Co.	State-Collett 4	5-19	25	25	3235-3260†
Gulf Prod. Co.	F. W. Taylor 8	5-19	200	150	3407-3446†
Gulf Prod. Co	F. W. Taylor 10.	5-19	400	350	3405-3442
Magnolia	C. E. Allen 1	5-19	20	20	3047-3512†
Eclipse Oil Co	Parton 1	6-19	50	50	3417-3450
Eclipse Oil Co	Parton 2	6-19	50	50	3265-3477†
Magnolia	W. E. Rock 6	6-19	150	150	3535-3552
Magnolia	T. J. Nash 8	6-19	250	250	3632-3704
Prairie O. & G	Keaghey A-3	6-19	10	10	3327-3350†
Dorsey et al	Harrison 5	6-19	2500	2400	3446-3463
Eastland-Midway	Brunette 1	6-19	50	25	3261-3282†
Gulf Prod. Co.	W. A. Parton 1	6-19	50	50	3360-3415†
Gulf Prod. Co.	F. W. Taylor 7	6-19	100	100	3168-3200
Magnolia	Julia Davis 2	6-19	2500	2500	3405-3450
Leon Oil Co	Allen 1	6-19	350	350	3437-3467
Prairie O. & G	Ida Slayden 3	6-19	200	200	3440-3476
Prairie O. & G	Ida Slayden 7	6-19	600	600	3487-3519
Root, Hupp & Duff.	E. Perkins 1	6-19	9 200	7 000	3517-3536
Texas Company	W. T. Boyd 1	6-19	4200	4000	3448-3465
Humble O. & R	Sue 1	6-19	80	80	3509
Humble O. & R	Davis 1	6-19	800	800	3356
Prairie O. & G	Christmas 4	6-19	50	50	3390
Prairie O. & G	Terrell 12	6-19	220	220	3462
Prairie O. & G	Earnest 5	6-19	1008	1008	3330
Prairie O. & G	E. Roper 2	6-19	2250	2250	3441
Sun Company	Rust 6	6-19	4000	4000	3449
Sinclair Gulf	Barnes 1	6-19	800	800	3673
Markham-System	Copeland 13.	6-19	1600	1600	3585
Dorsey et al	Harrison 6	6-19	500	500	3470
Chapman et al	Wright 1	6-19	500	500	3471
Tex Rickard	Cotton 1	6-19	2200	2200	3430
Texas Company	Boyd 2	6-19	3000	3000	3481
System Oil Co	Danley 2	6-19	1100	1100	3482

Stephens County

Texas Company	J. W. Parks A-2	6-17	300	185	3187-3233
Texas Pacific	Smith 1	8-17	60	10	3281-3291
Texas Pacific	L. J. Veale 1	2-18	75	524	3968-3992‡

ords of Wells in North Texas Development

Duke-Knowles Area in Comanche and Erath Counties

Company	Farm—Well	Date Comp.	Initial Prod.	Present Prod.	Sand Record
Texas Company	J. A. Lauderdale 1.	3-18	350	140	3208–3225
Texas Company	G. W. Kiethley	3-18	150	19	3245–3216
Texas Pacific	Haney 1	7-18	30	....	1936–1977
Texas Pacific	Suddeth 1	9-18	75	9	3504–3516††
Texas Company	Black Bros. 1	9-18	80	130	3253–3497†
Gulf Prod. Co.	G. R. Davis 1	9-18	650	415	3239–3268
Gulf Prod. Co.	A. M. Fincher 2	9-18	1500	450	3246–3291
Texas Company	W. F. Houston 1	10-18	75	83	3326–3425
Texas Company	C. T. Sandidge 1	10-18	100	....	3209–3229
Texas Company	J. W. Parks A-3	10-18	200	203	3254–3274
Texas Company	Lee 1	10-18	200	52	3090–3112
Mid-Kansas	W. M. Yates 1	10-18	50	53	3205–3280
Mid-Kansas	J. S. Knott 1	11-18	200	98	3229–3239
Lone Star	Warren 1	11-18	100	59	1691–1697
Moore & Rosier	N. Russell 1	11-18	200	30	3211–3232†
Texas Pacific	W. E. Carey 1	11-18	300	....	3221–3326
Texas Company	N. J. Brooks 1	12-18	125	83	3143–3173
Texas Company	J. C. Curry 1	12-18	80	200	3272–3341†
Texas Company	L. Sykes 1	12-18	40	....	3235–3261
Texas Company	J. W. Parks A-1	12-18	246	61	3167–3180
Texas Pacific	Riddle 1	12-18	30	....	3218–3228
Mid-Kansas	W. E. Carey 1	12-18	500	1795	3217–3237†–‡‡
Gulf Prod. Co.	J. T. White 1	2-19	1000	340	3304–3312
Texas Company	K. Stoker 1	2-19	3000	1773	3181–3186
Texas Pacific	Bradford 1	2-19	700	29	3592–3608
Palo Pinto O. Co.	Swenson 1	2-19	150	485	3340–3382
Monitor-Pennok	Swenson 1	2-19	1350	495	3386–3400†
Sun Company	McMeen 2	2-19	350	170	2150–2182
Gladstone O. & R.	Stephenson 1	3-19	480	285	3518–3538
Sinclair Gulf	Manning 1	3-19	316	90	3118–3195
Texas Company	G. T. Sandidge	3-19	Show	....	3259–3273
Texas Pacific	R. M. Rogers 1	3-19	100	61	3104–3124
Mid-Kansas	W. M. Yates 2	3-19	50	52	3197–3240
Superior O. & G.	Hagaman 1	3-19	200	....	3438
Gulf Prod. Co.	Winston 1	3-19	400	300	3310–3320†
Texas Company	E. S. Curry 1	3-19	20	11	3197–3355†
Sinclair Gulf	Ledbetter 1	3-19	400	190	3161–3265†
Gulf Prod. Co.	A. M. Fincher 4	3-19	2600	820	3160–3235
Texas Company	J. S. Pierce 1	3-19	400	104	3208–3238
Gulf Prod. Co.	Davis 2	3-19	125	475	3171–3305†
Texas Pacific	W. E. Carey 2	3-19	100	69	3050
Texas Company	R. O. Thomas 1	3-19	200	565	3265–3275
Gulf Prod. Co.	Caldwell 1	3-19	1000	693	3442–3450
Texas Pacific	Rimmington 1	3-19	500	519	3078–3118†
Texas Company	Billingsley 1	3-19	570	52	3170–3196
Texas Company	Groseclose 1	3-19	600	317	3064–3145
Gulf Prod. Co.	McCauley 1	3-19	10	....	....
Texas Company	Walker 1	3-19	200	....	....
Texas Company	W. H. Vick 1	3-19	150	61	3272–3330
Texas Pacific	W. R. Jackson 1	3-19	10	14	....
Texas Pacific	C. J. McCleskey 1.	3-19	10	....	....
Cunningham et al	Evans 1	3-19	400	128	3188–3198
Texas Company	B. F. Lauderdale 1	3-19	1440	528	3185–3277
Owen & Wilson	Harrison 1	4-19	100	30	....
Mid-Kansas	J. R. Jackson 1	4-19	100	....	....
Texas Company	M. J. Brooks 2	4-19	250	214	3273–3283
Texas Company	C. H. Houston 1	4-19	100	....	3304–3345
J. E. Crosbie et al	Hagaman 1	4-19	2420	753	3370–3470†
Brazos River O. & G.	Massengill 1	4-19	2500	1490	3360–3486†
Sun Company	J. H. McMeen 3	4-19	350	130	2160–2183†
Texas Ranger O. Co.	J. P. Booles 1	4-19	1700	533	3403–3415†
Texas Pacific	M. E. Bradford 2	4-19	140	100	3546–3548
Texas Company	R. O. Thomas 2	4-19	360	285	3255–3293
Texas Company	John Black 1	4-19	25	....	3365–3435††
Strab Oil Co.	D. Z. Pierce 1	4-19	50	245	1780–1890
Mid-Kansas	Satterfield 1	4-19	Gas	1360	3472–3400
Texas Company	C. B. Brown 1	5-19	500	347	3050–3085
Lone Star	J. T. Heatley 1	5-19	110	53	3167–3259†
Sun Company	Homer Lee 1	5-19	150	52	3236–3296†
Texas Company	G. T. Sandidge 7	5-19	2000 ft. Fluid	....	3158–3240†
Moore & Rosier	N. Russell 2	5-19	320	194	3256–3270†
Sun Company	O. R. Rochelle 1	5-19	230	63	3332–3385†
Sinclair Gulf	Wells 1	5-19	50	19	3487–3515
Texas Company	Parks B-3	5-19	1280	338	3238–3257
Swensondale O. Co.	Swenson 1	5-19	5752	3125	3180–3181
Moore & Rosier	Russell 3	5-19	100	90	2166–2188†
Moore & Rosier	Russell 4	6-19	920	834	3227–3250†
Texas Company	S. W. Lauderdale 2	6-19	300	165	3158–3240†
Texas Company	Sandidge 6	6-19	....	....	3203–3230†
Texas Company	K. Stoker 2	6-19	2400	1800	3156–3184
Texas Pacific	E. Y. Jennings 1	6-19	300	144	3586–3616
Gulf Prod. Co.	G. R. Davis 3	6-19	2640	2500	3127–3283
Gulf Prod. Co.	McCauley 2	6-19	300	3112	3181–3185
Sinclair Gulf	Satterfield 1	6-19	100	616	3285–3325
Sun Company	J. A. Carey 1	6-19	350	635	3302–3305
Magnolia	Lanham 1	6-19	250	75	3205–3252

Duke-Knowles Pool

Company	Farm—Well	Initial or Maximum Prod.	Present Prod.	Drilling Depth	Sand Record
Tex Penn O. Co.	Duke 1	700	6	....	2685–2692
Tex-Penn O. Co.	Duke 2	150	100	....	2685–2695
Tex-Penn O. Co.	Duke 3	850	50	....	2702–2707
Tex-Penn O. Co.	Knowles 1	5,800	600	....	2734–2750
Tex-Penn O. Co.	Knowles 2	....	200	....	....
Tex-Penn O. Co.	Knowles 3	600	200	....	2705–2720
Tex-Penn O. Co.	Mary Lewis 3	....	....	2940†	....
Tex-Penn O. Co.	N. E. Payne 1	35m gas	35m gas	....	2680–2688
Tex-Penn O. Co.	S. E. Snodgrass 1.	25m gas	25m gas	....	2670–2720
Tex-Penn O. Co.	C. G. Crowell 1	10m gas	10m gas	....	2603–2608
Magnolia Pet. Co.	Joe Duke 1	3200	80	....	2654–
Magnolia Pet. Co.	E. S. Davis 1	15	17	....	2731–2752
Magnolia Pet. Co.	C. T. Terrel 1	5420	2600	....	2626–2668
Magnolia Pet. Co.	C. T. Terrel 2	3500	3500	....	2660–
Magnolia Pet. Co.	J. H. Woodward 1.	7	7	....	2756–2775††
Magnolia Pet. Co.	J. D. Moorehead 1.	635	325	....	2720–2746
Magnolia Pet. Co.	J. B. Foote 1	112	20	....	2672–2675
Magnolia Pet. Co.	J. M. Sparks 1	75	37	....	2858–2880
Magnolia Pet. Co.	L. C. Odle 1	85	1	....	2655–2697†
Magnolia Pet. Co.	W. M. Echols 1	7015	6200	....	2711–2714
Skelly & Sankey	F. D. Hogg 1	1150	80	....	2660–2695†
Skelly & Sankey	F. D. Hogg 2	2135	....	....	2678–2739†
Skelly & Sankey	F. D. Hogg 3	400	....	....	2700–2767†
Skelly & Sankey	F. D. Hogg 4	85	125	....	2658–2742†
Plains O. & G. Co.	J. D. Herrington 1.	450	....	....	2687–2723
Plains O. & G. Co.	J. D. Herrington 2.	400	100	....	2673–2689
Plains O. & G. Co.	J. D. Herrington 3.	200	75	....	2662–2721†
Plains O. & G. Co.	J. D. Herrington 4.	150	75	....	2650–2660
Plains O. & G. Co.	W. Stockton 1	1m gas	....	....	2638–2663
Sinclair Gulf	F. D. Hogg 1	3600	195	....	2685–2695
Sinclair Gulf	F. D. Hogg 2	120	102	....	2710–
Sinclair Gulf	F. D. Hogg 3	100	10	....	2756–
Sinclair Gulf	F. D. Hogg 4	1800 ft. Fluid	....	....	2770–2843†

Company	Farm—Well	Initial or Maximum Prod.	Present Prod.	Drilling Depth	Sand Record
Sinclair Gulf	F. D. Hogg 5	20m gas	20m gas	....	2528–2552
Sinclair Gulf	G. T. Sloan 1	25	10	....	....
Waxahatchie	W. A. Thompson A1	12m gas	25	....	2645–2666
Waxahatchie	W. A. Thompson A2	280	20	....	2690–2712†
Waxahatchie	W. A. Thompson A3	100	....	....	2681–2688†
Wyandotte-Hogg Creek Oil Co.	W. A. Thompson 1	35	5	....	2661–2725
Gilliland O. Co.	Zula Lynn 1	7m gas	5	....	2762–2804†
Ohio Fuel Oil	J. Herrington 1	125	80	....	3108–3141
Leon Valley O. Co.	J. H. Haynes 1	60	50	....	2770–2790
Phoenix Oil Co.	W. C. Clayton 1	25	12	....	3100–3120†
Sun Company	J. H. Malone 1	10	25	....	2888–2898†
Sun Company	S. K. Shuler 3	3500	2000	....	2657–2663
Humble O. & R. Co.	Dick Gray 1	500	45	....	2635–2670
Humble O. & R. Co.	Dick Gray 2	400	250	....	2605–2624
Texas Company	G. N. Grice 1	20m gas	....	....	2652–
Texas Company	J. B. Wilson 1	20	10	....	2642–2850
Cattleman's Hogg Creek O. Co.	W. O. Bearden 1	10	275	....	2632–2641
Peerless Prod. Co.	J. T. Carruth 1	500	400	....	2689–2708
Duke Extension	J. T. Carruth 1	150	75	....	2700–2725
Southland O. Co.	H. H. Vaught 1	800	200	....	2573–2579
Duke-Consolidated	J. E. Haynes 1	25	25	....	2760–2780
Dixie O. & R. Co.	W. H. Hamilton 1	2700	2000	....	2670–2679
Royal Duke O. Co.	J. H. Smith 1	75	75	....	....
Union O. & R. Co	Katie May 1	300	150	....	2722–
Gulf Prod. Co.	Prater-Grice 1	1800	4000	....	2686–2690
Silsbee O. Co.	J. T. Carruth 2	30m gas	30m gas	....	2680–
Union O. & R. Co.	Dabney 1	1000	1000	....	2690–2706
Crosbie et al	Ed Putty 1	50	480	....	....
Ranger-Rock Island O. Co.	L. M. Shallenberger 1	540	2000	....	2754–2756
Cosden O. & G. Co.	J. T. Carruth 1	72m gas	2000	....	2691–
Mid-Kansas O. & G.	P. J. Dabney 1	1000	1000	....	....
Union O. & R. Co.	Dabney 1	1000	400	....	....
R. O. Harvey et al.	Russell-Ballard 1	15	....	....	2660–2764†
Del-Tex Oil Co.	Zula Lynn 1	5	....	....	2651–2672
Petroleum Prod. Co.	Fleming 1	15	....	....	2761–2886†
Reilly Drilling Co.	Town Lot 1	....	....	3237	....
Sam Davis O. Co.	Davis 1	....	....	3550†	....
Comanche O. Assn.	Sturkey 1	....	....	3000	....
Thomas & Ludlow	J. H. Luckie 1	....	....	3456	....
Tippett et al	Armstrong	....	....	3120	....
Sabano O. & G. Co.	Hulsey	....	....	3130	....
Desdemona O. Co.	Miller 1	....	....	3330	....
Southwest O. Co.	Pearson 1	....	....	3030	....
Southwest O. Co.	Carruth 2	25m gas	25m gas	....	2665–2720
Home Boy O. Co.	Huckaby 1	....	....	3300	....
Crowell & Gant	Moore 1	....	....	3750	....
Copperas Creek O. Co.	Fisher 1	....	....	2900	....
Comanche-Northern	Pearson 1	....	....	2929a	....
Union O. & R. Co.	N. J. Cogburn 1	....	....	3030a	....
Gates O. Co.	M. B. Hilley 1	....	....	3610a	....
R. O. Harvey et al.	W. M. Braswell 1.	....	....	....	2890–2904†
F. C. Henderson	Mrs. H. B. Kee 1.	....	....	3402a	....
Producers & Refiners Corporation	Hodge 1	....	....	3357a	....
J. K. Crawford et al.	J. W. Tate 1	....	....	2930†	....
Tulsa O. & R. Co.	Fritts 1	....	....	2860	....
Crescent O. Co.	Corbett 1.	....	....	2985a	....
Connelly & Aquirre	M. J. Eppler 1	10	....	3500a	2760–2826†
Cosden O. & G. Co.	W. Stockton 1	....	....	3250	....
Harrington-Robinson	Cage 1	....	....	3325	....
McJunkin et al.	Cook 1	....	....	3540	....
McAlister et al.	J. M. Stroud 1	....	....	3900	....
Burt & Griffith	Davis 1	....	....	3650	....
Burt & Griffith	Cowan 1	....	....	3000	....
Burt & Griffith	Fouts 1	....	....	3530	....
Burt & Griffith	Roberts 1	....	....	3000	....
Burt & Griffith	Randolph 1	....	....	3220	....
Burt & Griffith	Laney 1	....	....	2710	....
Texas Pacific O. & G.	Fuller 1	....	....	3515	....
Comanche Gusher	Echols 1	....	....	....	2696–2701
Comanche Queen	Rigson 1	....	....	2750	....
Jefferson O. Assn.	Mowell 1	10 est	....	....	2631–2667
National Rtg. Co.	J. L. Pittman 1	....	....	3250	....
North American Rtg. Co.	J. H. Haynes 1	....	....	2798†	....
Simmons O. Co.	H. B. Simmons	....	....	3565a	....
J. L. Hamon	E. Boyles 2	....	....	....	2660–2670†
Humble O. & R. Co.	W. Stockton 1	25	25	....	2743
Roxana Pet. Co.	J. W. Rudd 1	....	....	3111	....
McMan Oil Co.	J. W. Reynolds 1	15m gas	15m gas	....	2690
Comanche Chief	J. B. Wilson 1	5	....	....	3031†
Central Texas	J. T. Carruth 1	10m gas	10m gas	....	2671–2672
Atlantic Oil Prod. Co.	H. H. Vaught 1	20m gas	20m gas	....	2542
Humble O. & R. Co.	C. C. Stockton 1	....	....	3035	....
Southwest Pet. Co.	W. Stockton 1	250est	....	....	2785–2810†
Manhattan O. Co.	J. M. Jackson 1	....	....	3140a	....
Duke Dome O. Co.	F. T. Pearson 1	Show	....	3065a	....

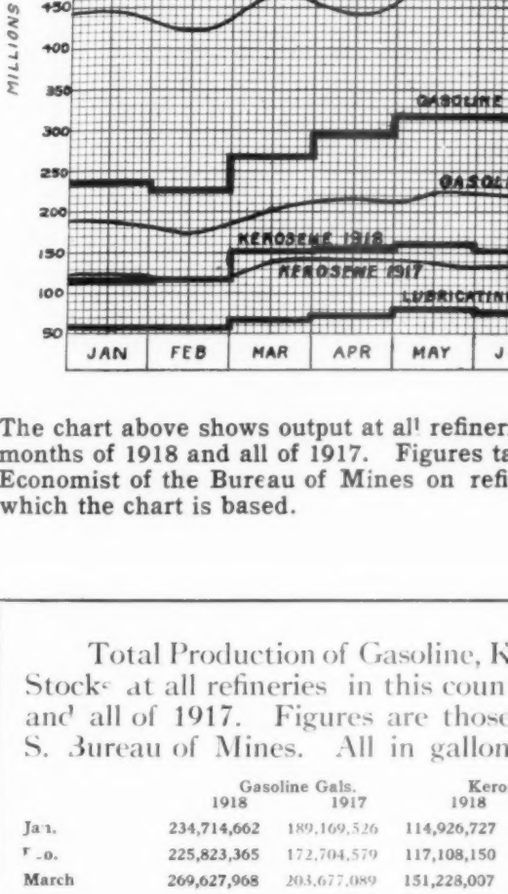
‡—Corrected depth, 3,660 feet.
‡‡—Maximum, 11,500 barrels.
†—Shot.
††—Pumping.
a—Abandoned.

An article summarizing development in Stephens and Eastland counties and the Duke-Knowles area in Comanche and Erath counties, Texas, as shown by the accompanying table, appears on page 46 of the NATIONAL PETROLEUM NEWS, of which this insert is a supplement. Whereas these figures show initial and present production the article analyzes the figures and draws graphic deductions applicable to development. In a few cases "initial production" figures are given as such when they are really maximum production figures, the wells being drilled deeper or shot after the initial showing.—Editor.

6–17	300	185	3187–3233	Sinclair Gulf	F. D. Hogg 3	100	10	2756–
8–17	60	10	3281–3291	Sinclair Gulf	F. D. Hogg 4	1800 ft.		
2–18	75	524	3968–3992‡			Fluid	....	.... 2770–2843†

Put this sheet on your
on your desk. It will g
constantly refer to.

Refinery Output



The chart above shows output at all refiner
months of 1918 and all of 1917. Figures ta
Economist of the Bureau of Mines on refi
which the chart is based.

Total Production of Gasoline, K
Stocks at all refineries in this coun
and all of 1917. Figures are those
S. Bureau of Mines. All in gallon

	Gasoline Gals. 1918	Gasoline Gals. 1917	Kero 1918
Jan.	234,714,662	189,169,526	114,926,727
Feb.	225,823,365	172,704,579	117,108,150
March	269,627,968	203,677,089	151,228,007
April	293,396,162	213,131,664	153,703,582
May	319,391,202	225,655,440	160,590,760
June	315,023,495	219,843,859	151,840,252
July	332,022,095	238,302,073	156,828,826
Aug.	330,335,046	249,365,562	149,678,850
Sept.	314,595,959	250,348,628	164,953,793
Oct.	314,251,318	265,634,890	164,928,640
Nov.		258,696,514	
Dec.		243,175,209	
10 mos. 1918	2,949,180,622		1,485,797,692
All 1917	2,729,712,033		1,602,015,103
All 1916	2,058,880,596		1,455,495,732

Exports Oil Pr

The table below shows exports from
nine months of 1918, and for all of 1917 a
the Bureau of Foreign and Domestic Co
shipments to Allied Europe of gasoline, e
being larger than for all of 1917. Fuel oil
also. Kerosene and lubricating oil shipm
gasoline and fuel oil exports to fill military

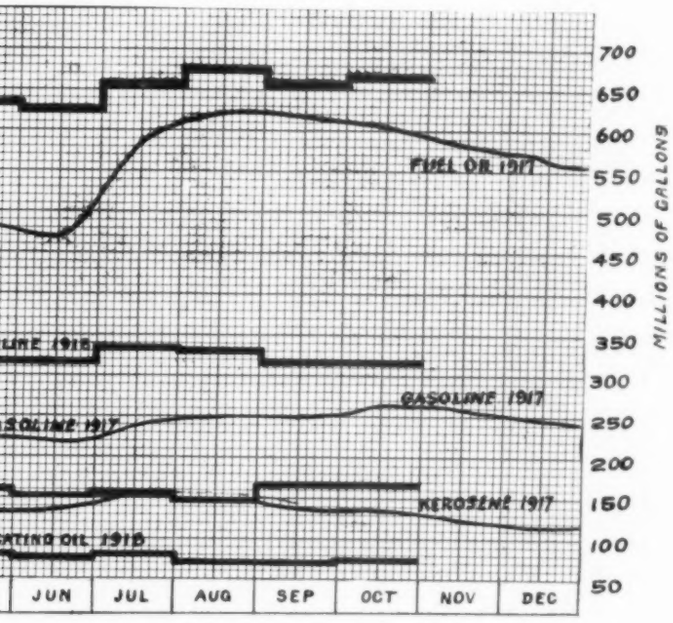
Crude Fuel, Gas

ing.—Editor.

Statistical History For

our office wall or under the glass
ll give more facts and figures you

ut Of Important Products



ineries in this country of principle oil products during 10
es taken are from the monthly reports of the Petroleum
refinery production. Below are given the figures on

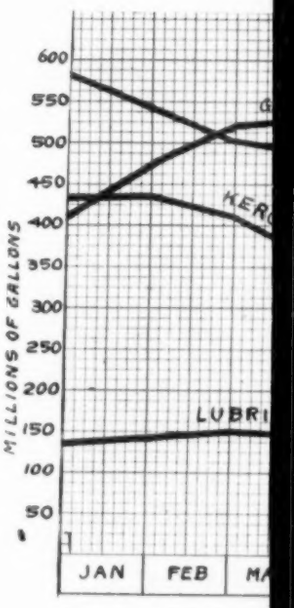
e, Kerosene, Fuel and Gas Oil, and Lubricating
ountry by months for first ten months of 1918,
hose prepared and issued monthly by the U.
llons.

	Kerosine Gals. 1918	1917	Fuel, Gas Oil, Gals. 1918	1917	Lubricating Oil, Gals. 1918	1917
	,727	120,735,586	534,729,695	443,955,903	54,706,360	57,954,879
	,150	113,369,304	498,858,331	424,115,567	56,440,455	51,831,577
	,007	141,123,626	587,985,804	467,378,504	69,308,351	60,848,934
	,682	140,594,030	578,255,34[illegible]	439,724,364	71,022,204	59,546,525
	,760	132,850,318	631,586,209	481,281,431	79,589,735	62,247,738
	,252	135,738,427	628,842,033	468,190,931	74,420,996	57,928,393
	826	157,259,832	658,439,682	585,932,568	79,303,107	62,307,742
	850	145,678,850	671,113,871	620,029,650	72,892,879	62,347,947
	793	138,769,343	653,085,050	618,667,279	70,593,079	58,686,398
	640	135,775,025	661,780,441	608,327,006	72,244,633	66,289,783
		121,133,610		580,140,259		62,631,249
		118,987,502		551,287,109		59,023,661
	592		6,104,676,457		700,521,799	
	103		6,288,430,581		721,644,821	
	732		4,663,895,284		624,541,195	

Products From U. S.

rom this country of various petroleum products for
17 and 1916, the figures used being those issued by
Commerce. The significant point is the enormous
e, exports of this product for 9 months of this year
l oil shipments for 1918 were heavier than last year
ipments were sacrificed to give more cargo space to
tary needs.

Gas Oil Kerosene Lub. Oils Gasoline Naphtas etc

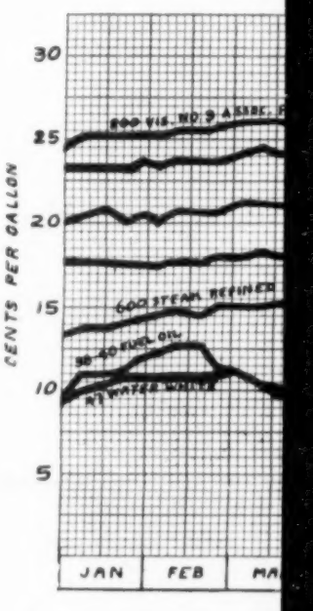


The lines plotted
kerosene, fuel oil and l
the first ten months of
point is the sharp decr
to half that amount at

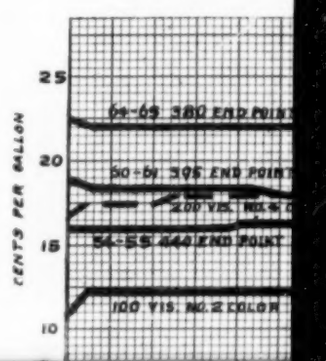
Stocks of Gaso
month of first ten m
Bureau of Mines in i

Refinery Stocks	Jan. 31, 1918	Feb. 28 1918
Gasoline	469,277,166	518,794,
Kerosene	436,254,045	411,150,
Fuel Oil	547,450,775	502,046,
Lub. Oil	141,907,918	150,259,

Range Of

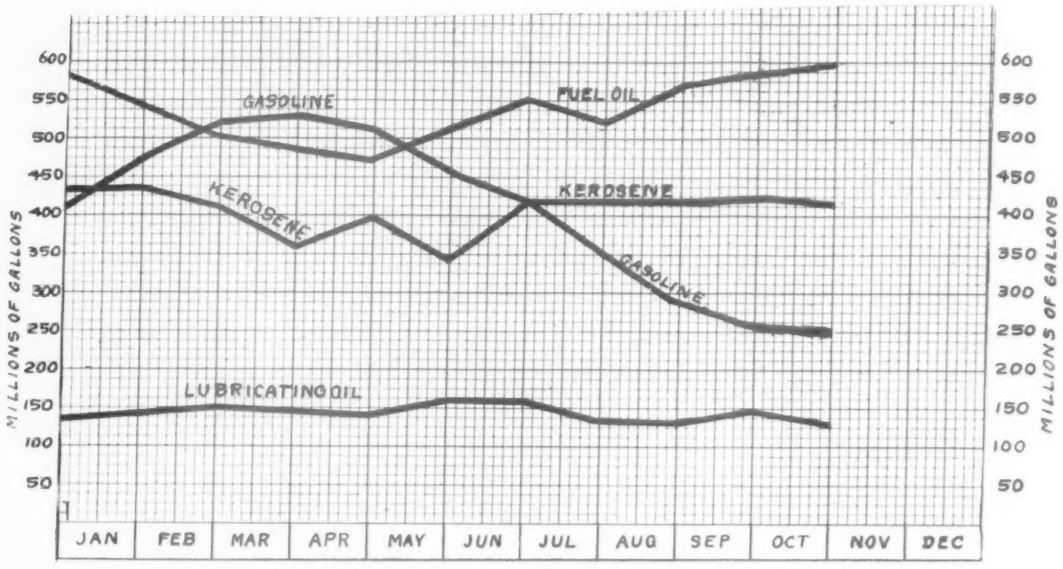


Range Of 19



tory For 1918 Of Oil Industry Of U

Stocks On Hand At Refineries

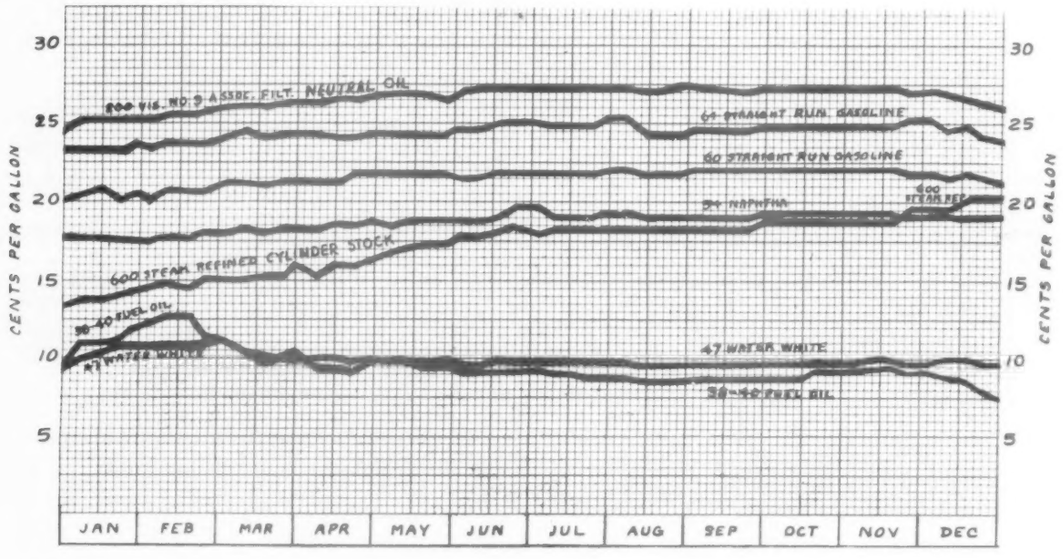


The lines plotted in the above graph show the increase and decrease in stocks of gasoline, kerosene, fuel oil and lubricating oils on hand at refineries in this country at the end of each of the first ten months of this year, figures being given in millions of gallons. The most noticeable point is the sharp decrease in gasoline stocks from over 500,000,000 gallons at the end of March to half that amount at the end of September. Detailed figures are given below.

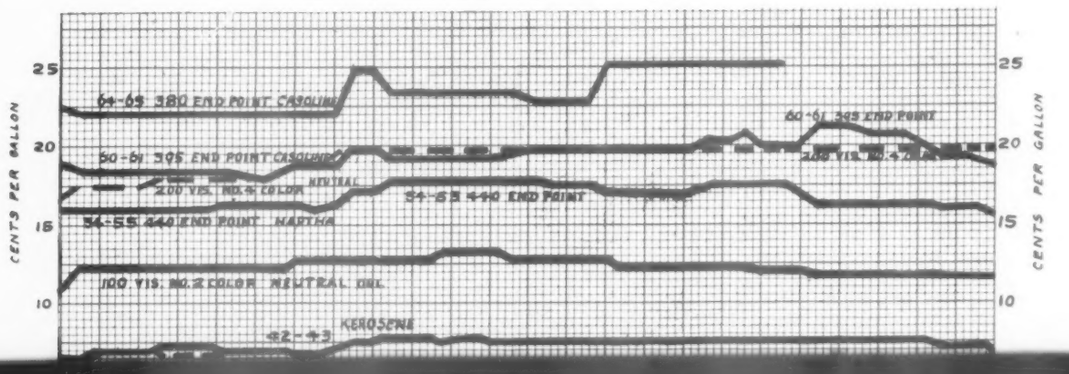
Stocks of Gasoline, Kerosene, Gas and Fuel Oil and Lubricating Oil at end of each month of first ten months of 1918 in gallons. The figures are those furnished by the U. S. Bureau of Mines in its monthly statement as to refinery production in this country.

Refinery Stocks	Jan. 31, 1918	Feb. 28, 1918	Mar 31, 1918	Apr. 30, 1918	May 31, 1918	June 30, 1918	July 31, 1918	Aug. 31, 1918	Sept. 30, 1918	Oct. 31, 1918
Gasoline	469,277,166	518,794,609	526,382,386	509,197,134	460,637,479	418,440,353	349,928,604	285,446,538	269,772,723	250,328,329
Kerosene	136,254,045	411,150,157	356,580,540	393,527,476	343,311,945	426,285,676	432,807,129	424,281,481	436,628,907	419,409,944
Fuel Oil	547,450,775	502,046,087	483,447,727	471,644,479	515,020,224	550,704,759	519,012,839	569,016,413	583,407,769	596,116,351
Lub. Oil	141,907,918	150,259,653	146,572,398	144,383,212	161,009,729	158,316,257	136,460,307	137,496,986	147,425,556	135,196,542

Range Of 1918 Refinery Prices, Eastern Plants



Range Of 1918 Refinery Prices, Okla.-Kans. Plants



shipments to Allied Europe of gasoline, exports of this product for 9 months of this year being larger than for all of 1917. Fuel oil shipments for 1918 were heavier than last year also. Kerosene and lubricating oil shipments were sacrificed to give more cargo space to gasoline and fuel oil exports to fill military needs.

Crude Fuel, Gas Oil Kerosene Lub. Oils Gasoline Naphtha, etc.

United States

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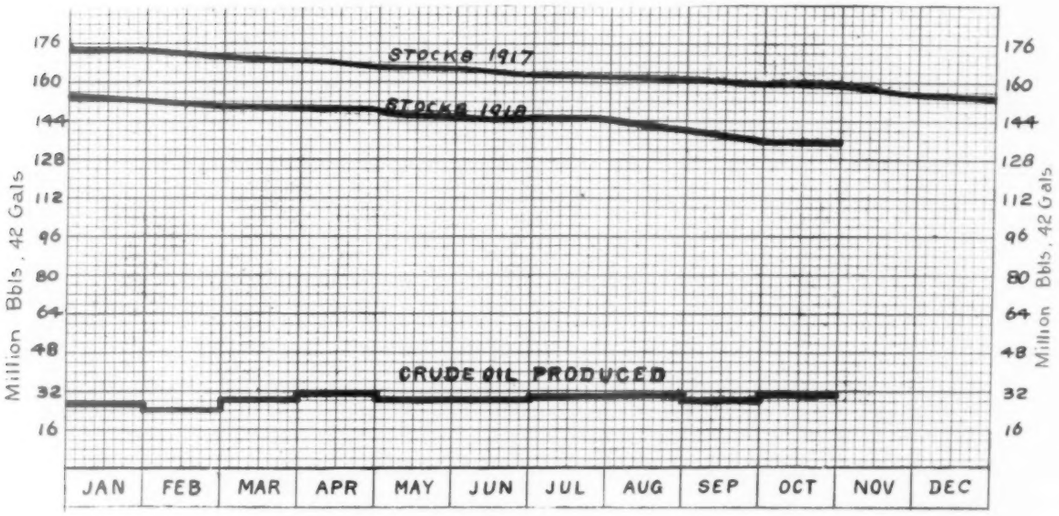
1918 Crude Production and Stocks



The lines charted above show the movement of total crude oil stocks in this country during ten months of this year and all of 1917, and the movement of crude production during ten months of this year, based on figures put out by the Bureau of Statistics of the Oil Division of the Fuel Administration, from reports furnished by the National Petroleum War Service Committee. The volume of stocks during all of 1918 was fairly well under the 1917 figures, declining pretty gradually but nevertheless constantly thruout both years.

Total crude oil stocks at the end of 1917 are given as 153,115,376 barrels, of 42 gallons, while at the start of 1918 they are taken as 154,313,514 barrels, the 1,198,138 barrels being added on account of readjustment of figures. Stocks at the end of October, this year, were 133,170,879 barrels, a decline of nearly 20,000,000 barrels from the end of 1917.

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Crude Production, Consumption, Exports, Imports and Withdrawal Stocks for first 10 months of 1918, all in barrels of 42 gallons. Figures are those prepared by the Bureau of Statistics of the Oil Division of the Fuel Administration from reports furnished by the Petroleum Committee.

1918	Crude Produced	Crude Shipments	Domestic Crude to Stills	‡Misc. Shipments	†Total Crude Income	¶Total Crude Outgo	Total Crude Stocks
Jan.	26,479,602	27,859,633	22,542,054	6,124,874	28,973,048	30,553,079	154,313,514
Feb.	24,481,599	26,517,615	22,206,125	4,844,235	26,664,774	26,700,790	152,933,483
March	29,061,008	29,893,878	24,795,632	6,039,203	31,621,953	32,454,823	150,897,967
April	28,291,478	29,319,549	24,796,000	6,042,407	31,200,582	32,628,653	150,064,597
May	29,549,906	29,927,177	26,926,629	4,703,319	33,250,414	33,627,685	148,636,526
June	28,538,536	30,280,279	26,699,942	4,632,261	31,595,218	33,336,981	148,259,255
July	29,802,209	31,962,427	27,729,360	5,227,960	32,715,316	34,875,534	146,517,512
August	29,278,139	32,864,444	27,027,239	8,194,666	33,370,095	36,956,400	144,243,957
Sept.	28,759,294	33,571,097	26,944,969	8,273,352	32,364,499	37,176,302	140,647,652
Oct.	29,011,960	31,676,938	.....	.....	32,771,993	35,436,963	135,835,849
10 mos. 1918	283,253,739	304,273,037	*229,667,950	*54,082,275	314,527,892	333,747,210	133,170,879
All 1917	329,106,023	348,842,266	298,188,107	61,315,149	360,690,401	380,426,644	.....
10 mos. 1917	272,898,966	239,025,002	*223,450,609	*40,676,540	.....	.....	.....

*9 months.

‡Constituting crude delivered into fuel trade without treatment, crude used for fuel in development and other petroleum operations and taking account of losses.

†Includes U. S. crude production and total imports.

¶Includes crude to stills, crude exported, misc. shipments.

Shipments Of Petroleum From Mexico

Below are shown exports of Mexican oils, principally crude and fuel oil, to this country for eight months of 1918 and all of 1917, shipments to other countries and imported oils going to stills in this country, the figures used being those prepared by the Bureau of Statistics of the Oil Division of the Fuel Administration. All figures are in barrels of 42 gallons, These figures are lower in some cases than those of the Bureau of Foreign Commerce, because they do not include "bunker oil" out of Mexico not reaching this or other countries.

	Imported This Country Barrels 42 Gallons		Shipments Other Countries Barrels 42 Gallons		Total Shipments Barrels 42 Gallons		Imported Oils to U. S. Stills Mostly Mexican Crude Barrels 42 Gallons	
	1918	1917	1918	1917	1918	1917	1918	1917
January	2,343,702	2,018,733	1,027,889	411,017	3,371,566	2,429,750	1,300,533	1,123,314
February	2,478,745	2,081,246	1,420,298	894,451	3,899,039	3,975,696	1,180,551	1,055,369

All 1916	2,058,880,596	1,455,495,732	4,

Exports Oil Product

The table below shows exports from this coun nine months of 1918, and for all of 1917 and 1916, t the Bureau of Foreign and Domestic Commerce. shipments to Allied Europe of gasoline, exports of t being larger than for all of 1917. Fuel oil shipments also. Kerosene and lubricating oil shipments were gasoline and fuel oil exports to fill military needs.

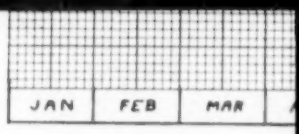
	Crude Gallons	Fuel, Gas Oil Gallons	Kerose Gallon
January	16,195,967	93,274,488	58,601,6
February	19,734,996	118,817,732	29,878,3
March	7,390,269	81,962,944	49,055,2
April	16,157,468	98,442,761	50,347,0
May	17,374,048	107,173,728	34,518,1
June	23,697,244	95,668,043	32,509,4
July	22,446,605	117,722,815	29,943,9
August	9,553,294	106,546,198	37,109,6
September	21,525,770	136,551,883	42,102,2
9 Months 1918	154,075,661	956,160,592	364,065,8
All 1917	171,258,309	1,123,490,081	652,710,1
All 1916	172,027,903	957,602,259	854,688,4

4,663,895,284	624,541,195

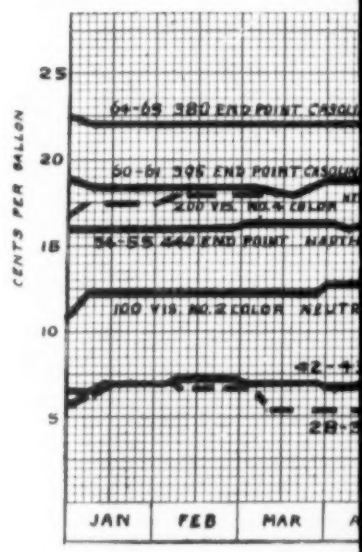
cts From U. S.

ountry of various petroleum products for 16, the figures used being those issued by e. The significant point is the enormous of this product for 9 months of this year ents for 1918 were heavier than last year ere sacrificed to give more cargo space to .

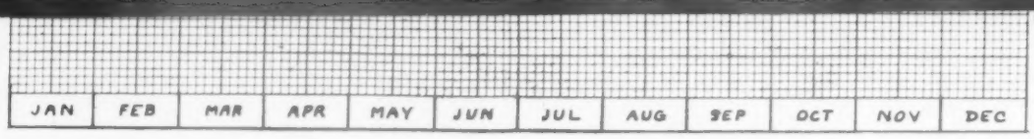
erosene allons	Lub. Oils Gallons	Gasoline Gallons	Napthas, etc. Gallons
601,634	18,847,731	17,676,884	24,009,258
878,381	17,706,837	23,796,587	11,599,451
055,267	25,749,333	27,918,144	18,837,988
847,085	16,184,235	20,862,303	25,999,990
518,171	25,617,187	39,143,830	17,936,584
609,493	23,990,930	26,905,868	21,481,558
943,900	19,852,823	30,614,009	14,899,484
109,644	27,807,975	46,469,441	10,474,751
102,255	18,654,347	35,512,782	9,482,075
965,830	194,411,398	268,899,848	154,716,139
710,138	280,935,241	224,811,186	191,437,877
688,404	260,805,939	167,928,262	187,942,021



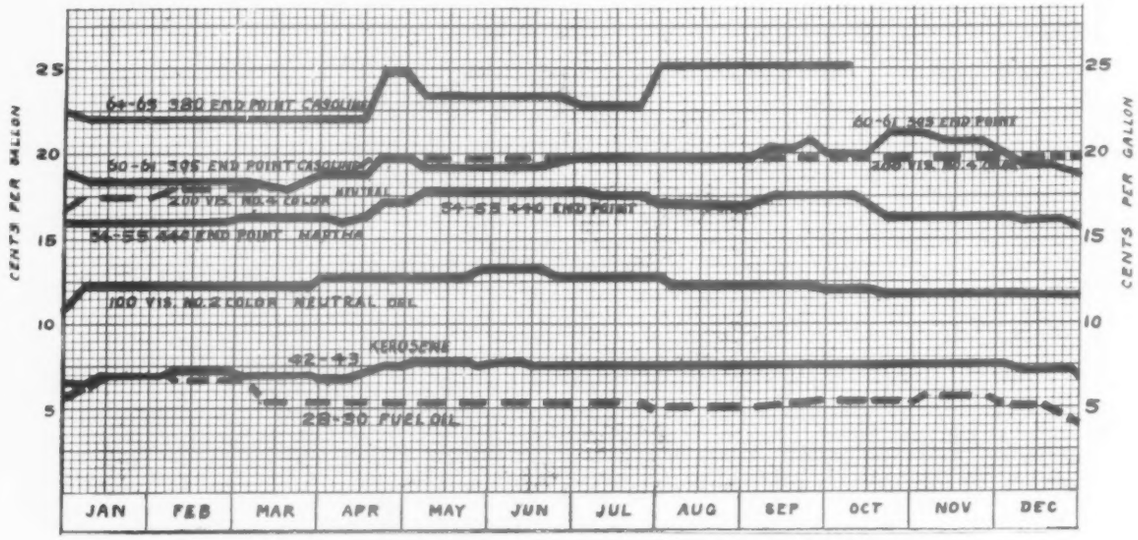
Range Of 1918



The two charts above give 1918. The figures on which NATIONAL PETROLEUM squares representing one cent.



Range Of 1918 Refinery Prices, Okla.-Kans. Plants



The two charts above give the range of refinery prices on principal basic products for all of 1918. The figures on which they are based were taken from the market pages of the NATIONAL PETROLEUM NEWS. Vertical units represent cents per gallon, two small squares representing one cent.

‡Constituting crude delivered into fuel trade without treatment, crude used for fuel in development and other petroleum operations and taking account of losses.
†Includes U. S. crude production and total imports.
¶Includes crude to stills, crude exported, misc. shipments.

Shipments Of Petroleum From Mexico

Below are shown exports of Mexican oils, principally crude and fuel oil, to this country for eight months of 1918 and all of 1917, shipments to other countries and imported oils going to stills in this country, the figures used being those prepared by the Bureau of Statistics of the Oil Division of the Fuel Administration. All figures are in barrels of 42 gallons, These figures are lower in some cases than those of the Bureau of Foreign Commerce, because they do not include "bunker oil" out of Mexico not reaching this or other countries.

	Imported This Country Barrels 42 Gallons		Shipments Other Countries Barrels 42 Gallons		Total Shipments Barrels 42 Gallons		Imported Oils to U. S. Stills Mostly Mexican Crude Barrels 42 Gallons	
	1918	1917	1918	1917	1918	1917	1918	1917
January	2,343,702	2,018,733	1,027,889	411,017	3,371,566	2,429,750	1,300,533	1,123,314
February	2,478,745	2,081,246	1,420,298	894,451	3,899,039	3,975,696	1,180,551	1,055,369
March	2,382,597	3,087,903	1,047,970	993,548	3,430,667	4,081,451	1,444,030	1,312,287
April	3,384,963	2,849,994	1,221,733	1,137,541	4,606,696	3,987,535	1,405,544	1,300,797
May	3,193,659	3,072,181	1,242,957	726,519	4,441,646	3,798,500	1,584,089	1,620,712
June	2,706,904	2,719,520	952,533	908,778	3,661,437	3,629,296	1,440,537	1,605,675
July	3,435,545	3,195,715	1,309,220	1,107,784	4,744,835	4,303,500	1,441,358	1,415,545
August	3,889,792	2,757,852	944,168	930,475	4,833,960	3,688,125	1,507,036	1,549,738
September		3,066,935		796,896		3,863,531	1,445,462	1,527,639
October		3,150,064		847,826		3,997,889		1,470,683
November		2,721,799		710,629		3,432,628		1,480,338
December		2,316,105		774,723		3,090,828		1,404,476
Total 8 Mos	23,822,935		9,166,811		32,989,746		*12,749,120	
All 1917		33,037,847		10,240,882		43,278,729		16,846,573

*9 Months